June 12, 2006 (*Corrected August 3, 2006)

MEMORANDUM **UTAH DEPARTMENT OF TRANSPORTATION**

TO: Jim McMinimee, P.E., Chairman

FROM: Barry Axelrod
Recorder, Standards Committee

Barry Axelrod

Digitally signed by Barry Axelrod
DN: cn=Barry Axelrod, c=US, l=Salt Lake City, st=UT, ou=http://www.usertrust.com/cps, email=baxelrod@utah.gov
Date: 2006.08.03 10:40:10 -06'00'

SUBJECT: Standards Committee Meeting Minutes and Next Meeting

The next meeting has been scheduled for Thursday, June 29, 2006 at 8:00 a.m., in the main 1st floor conference room of the Rampton Complex.

Item		Remarks	Sponsor
1.	Minutes of April 27, 2006	For approval	Barry Axelrod
2.	Supplemental Specification 02896M, Boundary Survey and Standard Drawing GW 6, Right of Way Marker	For approval	Jim Baird
3.	Supplemental Specification 01452M, Profilograph and Pavement Smoothness	For approval	Karl Verhaeren
4.	Supplemental Specification 01455, Material Quality Requirements	For approval	Karl Verhaeren
5.	Supplemental Specification 01571,Temporary Environmental Controls (Removal of Department Special Provision)	For approval	Karl Verhaeren Terry Johnson Shane Marshall
6.	Supplemental Specification 02610, Pipe, Pipe-Arch, Structural Plate Pipe, And Structural Pipe Arch (Removal of Department Special Provision)	For approval	Michael Fazio
7.	Supplemental Specification 02645, Precast Concrete Box and Three-Sided Culvert Structures (includes new title to Section 02645)	For approval	Ray Cook Boyd Wheeler
8.	Schedule for 2008 Issue of New Standards	For approval	Barry Axelrod
9.	Review of Assignment/Action Log	For review	Jim McMinimee
10.	Meeting Improvements (on-going agenda item)	For discussion	Jim McMinimee
11.	Other Business	For discussion	Jim McMinimee

JCM/ba
Attachments

* Page 12, bullet 4 corrected per June 29, 2006 meeting.

cc:

Cory Pope Director, Region One	Stan Burns Engineering Services	Richard Miller Standards
Randy Park Director, Region Two	Boyd Wheeler Bridge Design	Barry Axelrod Standards
David Nazare Director, Region Three	Karl Verhaeren Construction	Patti Charles Standards
Dal Hawks Director, Region Four	Tim Biel Materials	Shana Lindsey Research
	Richard Clarke Maintenance	Tracy Conti Operations
	Robert Hull Traffic and Safety	Carlos Machado and Todd Emery FHWA
	Troy Peterson Traffic Operations Control	Mont Wilson AGC
		Tyler Yorgason ACEC

April 27, 2006

A regular meeting of the Standards Committee convened at 8:00 am, Thursday, April 27, 2006, in the 1st floor conference room of the Rampton Complex.

Members Present:

Darrell Giannonatti	Construction	Member (Acting Chairman)
Richard Miller	Standards and Specifications	Secretary
Barry Axelrod	Standards and Specifications	Recorder
Stan Burns	Engineering Services	Member
Randy Park	Region 2	Member
Richard Clarke	Maintenance	Member
John Leonard for Robert Hull	Traffic and Safety	Member
Tim Biel	Materials	Member
Carlos Machado	FHWA	Advisory Member
Mont Wilson	AGC	Advisory Member
Tyler Yorgason	ACEC	Advisory Member

Members Absent:

Jim McMinimee	Project Development	Chairman
Robert Hull	Traffic and Safety	Member
Todd Emery	FHWA	Advisory Member
Vacant	Structures	Member

Staff:

Barry Axelrod	Standards and Specifications
Patti Charles	Standards and Specifications
Karl Verhaeren	Region 4 Construction
Shana Lindsey	Research
Michael Fazio	Hydraulics
Denis Stuhff	Hydraulics
Troy Peterson	TOC
Ed Rock	ETS
Wendell Hathaway	Region 2 Right of Way

Visitors:

Todd Mac Gillvray	TRANSCOR

Standards Committee Meeting

Minutes of the April 27, 2006 meeting:

1. Minutes of February 23, 2006 meeting were approved as written.

   Motion: Randy Park made a motion to accept the minutes as written. Seconded by Stan Burns. Passed unanimously.

   Agenda item 5 was covered next. After completion of that item the remaining items were taken in order.

2. Supplemental Specification 02896M, Boundary Survey (Agenda Item 2) - Presented by Wendell Hathaway.

   Wendell said this is a minor change to help comply with an Act passed by the State Legislature in 1984. Wendell discussed the requirements of the state statute. He said in order to save money we have been stamping a number on the markers instead of station and offset. He said because we have a permanent record of survey we put a number on the monument that corresponds to the map where all the data is located. A surveyor would need a copy of the map before going out in the field. He said the change will save a lot of money and bring us into compliance with the law.

   Discussion points were:

   - In response to a question, Wendell said the region right of way people and contractors will be the only ones to really notice this change.

   - Darrell asked if the region people were educated on this. Wendell said they were, adding this is the direction they all wanted to go.

   - Richard Miller asked if any Standard Drawings were impacted by this change. Wendell said he would have to check the drawing. Barry provided him with a copy of Standard Drawing GW 6, Right of Way Marker. Wendell looked at the drawing and indicated it was okay.

   - Darrell asked if there were any impacts on the Right of Way Division. Wendell didn't think so. Barry said Jim Baird originally submitted the change but was unable to attend the meeting.

   - Karl asked if there is a numbering system in place. Wendell said no, that the numbering starts at one end of the project and continues to the other end. He said there is no significance to the numbers and that they coincide with the map. Wendell commented that he thought it should be tied into the GIS system so no two monuments would have the same number.

- Mont asked where does the contractor go to get the number. Wendell said the contractor generates the number. He said the survey just starts with number one.

- Karl commented about the stamping within 0.01 feet. Following discussion, Wendell said he viewed the requirement differently. The result was confusion as to the requirement. Wendell said the wording and requirement need to be looked at.

- Barry commented about the change compared to the current specification, with the current specification having several additional requirements. Referring to the Standard Drawing, Barry said some of the items on the current Standard Specification are shown on the drawing. He said a lot of the items shown on the drawing were deleted by this recommended change. Barry said the drawing is not current once the supplemental takes effect.

- Referring to the recommended change and a question, Barry said paragraph A1 on the "right of way marker number" is new, A2 dealing with the "0.01 feet" is the same as the original, just a different paragraph number, and the rest of the original standard has been deleted. He said some of the deleted items are still on the drawing. Wendell said companies are using the drawing to have the markers manufactured with their company name and other information. He said that was overlooked on the drawing and needs to be brought back with the supplemental specification.

- John suggested the numbering system also be looked at. Wendell said right now each marker number is relative to just that particular project. The numbering of monuments starts back at one for each project. Wendell said it would be nice to have a numbering system that never duplicates a monument number.

- Discussion continued on the 0.01 feet accuracy of locating the marker. Wendell said there are a lot of questions that arise from this. GPS accuracy is one issue.

- There was a recommendation to take this back for updates and tie it in to the drawings.

Action Item: Jim Baird to update the supplemental specification and Standard Drawing GW 6 in accordance with the discussion.

3. Supplemental Specification 00555M, Prosecution and Progress; 00725M, Scope of Work; 00727M, Control of Work; and 01282M, Payment (Agenda Item 3)

Item removed from agenda prior to the meeting. Significant updates were needed. Karl said the needed changes are all related. Darrell said a Department Special Provision for the partnering portion of the change needs to be put out. Barry said a regular Special Provision would work and that a Department version is not needed for a couple of months.

4. Supplemental Specification 01452M, Profilograph and Pavement Smoothness (Agenda Item 4) - Presented by and Karl Verhaeren.

Karl said the purpose of this change was to eliminate shoulders from the incentive/disincentive. Karl said the current method is done by section. He said the definition also considers shoulders with design widths greater than 8 feet as separate sections in addition to the travel lane.

Karl said the dollar values on the submittal sheet are the maximum for the types of surface.

Discussion points were:

- Mont said you have to be certain what the paid sections will be, for example is it just the traffic lane. Darrell asked if it would be the same in urban areas where we have middle turn lanes.

- Stan commented on having smooth roads but that the shoulders were not included. He said if you build us a smooth road we will pay you so much. He asked how this fits in with partnering. Mont said you need to spell out what you want within the pay quantity of the contract.

- Barry asked about the dollar figures on the submittal sheet. Karl said they were for information and not something that is changing. Barry said Jim had a question on how the numbers were developed. Comment indicated they came from data over the last ten years or so.

- Mont asked how hard would it be for the designer to include in the plans a listing of the anticipated sections subject to the incentive/disincentive. Darrell said that is related to the implementation plan for the change. Tyler commented about changing the bid item. Mont said being on the plans would be better.

- Randy said he had a problem with the Department trying to put that together, adding that he did not remember anyone having a problem with this. Mont said he has seen five different UDOT crews treat it four different ways.

- Tim asked if this could be corrected with interpretation and a better explanation in the specifications as opposed to calculating it out. Randy said he understands we may calculate it differently, but as far as he knows we haven't had a time when we couldn't come to an agreement. Karl said he agrees and understands what Mont is saying, but not what the discrepancies are.

- Darrell asked Tyler when he goes to a PS&E, how he handles it. Tyler said he didn't remember any medians not clearly being a left turn lane or something else. Referring to a specific project, Darrell asked Tyler how he would handle it. Tyler said he was not sure what was out there.

- Randy suggested a smoothness specification that went from edge of pavement to edge of pavement, regardless of where it is. John asked about the use of medians. He said that in some cases emergency vehicles including fire trucks may use it and in that case may want a smoothness specification. He said everything from edge line to edge line may be a traveled way. Karl said edge line to edge line leads to a more complicated way of calculation. He said lane mile or sections of lane mile is standard across other states. Karl said a definition may work but he did not think putting it on the plans is the way to go. Randy agreed, adding that we continue to treat shoulders like we have in the past and treat medians like travel lanes.

- Mont said another question the contractor asks is how am I going to get paid. He said whatever that is; it just needs to be identified.

- Darrell asked if the supplemental specification needed to be brought back to address these issues.

- Darrell said he had another question. He said on an asphalt rehab we clearly define that we are not going to run traces prior to manholes being raised. No distinct question was asked. The only comment was is this a problem. Discussion followed on what the public expects and what takes place on the project relative to paving over manholes and when they are raised. Karl said he could bring the item back. Darrell suggested Karl think about the manhole issue.

Action Item: Karl to review the supplemental specification and update in accordance with the discussion on measurement and manhole issues.

5. Supplemental Specification 02633, Concrete Drainage Structures (Agenda Item 5) - Presented by Michael Fazio.

Darrell asked Michael to detail the reason for the change.

Michael said there has not been any standard to cover concrete drainage structures. He said in order to save money Contractors are using pre-cast more and more, adding that there was nothing for our inspectors to use as an acceptance tool. Michael said during the last meeting it was decided to include cast in place drainage structures. He said the thought was to add a second section. After that he said it was decided to combine the two sections into one. He said he met with Karl and a couple other people to review the specification and decide on the best way to combine the two sections.

Michael said the section has been cleaned up and is ready to go. He said some areas were cleaned up to cover applicability for both types. He said in essence the specification is the same as what was discussed at the last meeting.

Discussion points were:

- Darrell said that Jim wanted information on who did the testing. Michael said just about anybody could perform the water test, going on to explain the test. Michael said more professional equipment would be needed for the air test. He said there are specialized companies that could do the air test.

- Stan asked if there would be a burden on the Materials staff to pre-approve the pre-cast plants to build the items. Troy said the manufacturers have to be certified before even getting on a list, so it would not be a problem.

- A question on the additional cost of boxes came up. Mont asked how many are done each year. The response was one every 300 feet on new construction.

- Denis commented on the problem with the bad installation they have seen. This is where the problem is. He said the testing will eliminate that problem. Richard Clarke said the tests would not apply if the installation was bad enough so that the Contractor changed the pipe.

- In response to a question from Mont on Article 3.1, paragraph A, Michael said the Contractor is responsible to make sure the correct size of pipe is used with respect to the size of the hole. Karl said the paragraph refers to Survey and that staking should be done in advance. Mont agreed, adding that on rare occasions something will have to be changed in the field. He said it is embarrassing to bring out the wrong size pipe, adding that is the Contractor's fault. Michael said the Contractor needs to stake everything out and then order the correct size boxes.

- Darrell said something he has not heard come out of the Committee is what happens after the specification is out the door. He said getting construction crews up to speed is important. Michael said they already have meetings set for this.

- There was no further discussion.

Motion: Stan Burns made a motion to approve Supplemental Specification 02633 as presented. Seconded by Tim Biel. Passed unanimously.

Darrell asked about adding an implementation step to the submittal sheet. How do we get changes to the crews and inspectors? He said that has to be part of the process. Barry said he thought this had been discussed several years ago, before the submittal sheet process. Richard asked if this could be discussed more when the Standards Committee policy is discussed later in the meeting. Barry said that is Agenda Item 7.

Karl reminded everyone that measurement and payment and bid items need to be set up for this new section. He said direction also needs to be given to the designers. Michael said they were already working on that.

Darrell also commented on including changes to the Electronic Bidding System on the submittal sheet.

6. Supplemental Specification 13557, Variable Message Sign and Overhead (Agenda Item 6) – Presented by Troy Peterson.

Troy said this specification is a hold over from August 2005. He said Structures wanted them to look at the references. The other ATMS supplemental specifications were approved at that time. Troy pointed out the comment sheet from Structures that was included in the package. He said 34 items were identified for resolution. Troy said they are satisfied with the changes. He said the references were updated as well as the equipment.

Troy handed out a corrected copy of the specification, indicating the one in the package was not correct.

Troy introduced Todd MacGillvry from TRANSCOR who help put the specification together.

Todd said many of the updates were the result of comments he received from Barry. Todd said the Related Sections and Reference were updated to match the rest of the specification. Barry said this was part of their regular check of suggested changes to the Standards. Todd said that Structures wanted to use AASHTO specifications wherever possible. Todd said that Article 3.1, paragraph A was removed from the final copy. He indicated that Structures did not think design criteria should be in this specification. There were no other changes from the version originally submitted.

Discussion points were:

- In response to a comment on a temperature reference Todd said both the metric and US Standard unit were shown because of industry needs and that both the values in this case are the same. Both are negative 40 degrees.

- There was a question as to whether the majority of the items are state furnished equipment. Todd said all the items listed in 1.1A are state furnished. Darrell asked if there is any difficulty keeping these items in stock. Todd said they have to order the VMS sign for the project. Darrell then asked if they come in on time. Todd said they do have to be ordered a couple of months in advance. Troy said the UDOT project managers order the equipment. Todd said there is only one vendor.

- Darrell asked if there are any alternatives if the vendor is backlogged as has happened with other items and therefore delaying the project. Troy said they are always looking for multiple vendors. He said in some cases there is no choice. Discussion continued on options and impacts not directly related to this supplemental specification.

- Richard, referring to the title change, said the new title is shown as Overhead Variable Message Sign (VMS) and Support, but all references in the Section just indicate VMS with no indication of "Overhead." He thought that was confusing. Todd said the title change was a recommendation from Structures because this specification does not capture all of the VMS usages that may occur. He went on to explain some of the usages and options.

- In response to a question Todd said there currently is not a separate section for these other usages. He said they are looking into the options for VMS on the side of the road. He said because of weight something does need to be developed.

- Richard, referring back to his original question, asked if the terminology with the title change and not a corresponding change in the specification cause confusion for the construction people in making sure the item is installed properly. Shana suggested changing "VMS" in the body of the specification to "OVMS." Karl commented that the title change may require changes to the bid system as well as measurement and payment.

- Darrell asked if the Standard Drawings were checked to verify there is no impact as a result of this change. Todd said there are no Standard Drawings for the VMS structure. He said there are working drawings that should become Standards in the future. Discussion continued on testing and certification of the VMS equipment.

- Darrell highlighted the point for an ATMS representative as a member on the Standards Committee. This is an agenda item for later in the meeting.

- Todd said he did not have any further discussion points. Barry asked about the title and what was decided. There did not seem to be any resolution for that part of the earlier discussion, including Richard's question. Barry asked if the word "overhead" is really needed in the title of the specification. He said the Section Includes article could cover the issue. Patti added that the new roadside options could then be included in this section. Darrell asked Karl what he thought. Karl said that was preferable. Barry said that he looked through all the other ATMS specifications for references to Section 13557 in case the title was changed. Barry said no cross references exist to this section from the other ATMS sections. If there were, supplemental specifications would be needed for the respective sections. Barry said the word "support" being added to the title has no impact.

- There was no disagreement in not adding "overhead" to the title and no other discussion.

Motion: Park made a motion to approve Supplemental Specification 13557 as discussed and modified. Seconded by Tim Biel. Passed unanimously.

7. Standards Committee Policy 08A5-1 (Agenda Item 7) – Presented by Barry Axelrod.

Barry said the main items for discussion are highlighted on the first page of the submittal sheet. Barry said the first recommendation was to change the membership alignment for Construction where Karl Verhaeren would be the member representing Construction with Tim Biel already representing Materials. Darrell could still attend as a visitor.

Barry said the second item is how to handle the Structures realignment. Currently there is no official member representing that area. Barry said there has not been any representation since Bridge Operations moved under Shana and Bridge Design under Stan.

Darrell commented on the pre-Standards Committee meeting discussion with Jim. Darrell asked if it should be the Bridge Operations Engineer (Research and Bridge Operations Engineer). Barry said if Stan were to represent the Bridge area he would still have to coordinate with a bridge expert on all related issues.

Barry asked if we wanted a Structures person on the Committee as opposed to Stan or Shana representing Structures. This would add a new person. Barry said someone with Structures expertise needs to be on the Committee should a related question come up.

Discussion points were:

- Darrell asked if everyone agreed.

- Shana said when she took this to the Technical Committee on behalf of Jim they recommended that Boyd Wheeler cover that slot, with Dave Nazare making the initial recommendation.

- Richard Miller said both he and Barry thought a representative from the TOC with ATMS experience also be on the Committee. Richard said a lot of issues in that area have come to the Committee in the recent past and more are expected.

- Darrell said there are also region membership issues that need to be resolved.

- Randy Park agreed that another region member with technical experience is needed. He thought someone from the preconstruction area. Some asked if two were needed. One response was no. Shana commented that we already had Karl. Barry said that was why this issue was brought up; Karl is not a region representative. Once he becomes the voting member for Construction he can no longer represent the region. It doesn't matter where his office is located.

- Randy said we need people with the right knowledge, not the fact they are in the right place. Darrell commented that on many occasions the regions have commented on why a particular item was passed and doesn't the Committee have someone with a region perspective. Randy said a Preconstruction Engineer helps solve that problem.

- Richard said Stan already represents Preconstruction, asking did we want two members from that area.

- Currently Randy represents all four regions.

- Richard asked Barry to recap all the recommendations. Barry said the only one he was not sure about was region one. Darrell said the new member would be the Preconstruction Engineer, from a region other than the same region from where the current Region Director is from. The two positions can not be from the same region. If the Preconstruction Engineer is replaced the person will be selected from the same or a different region as to not be from the same region as the Region Director member. When the Region Director position rotates to another region the Preconstruction Engineer position will also be rotated if from the same region so as not to be from the same region.

- Barry summarized the recommendation, saying that the current wording of "Director, Construction and Materials" would be changed to "Engineer for Construction." The second item would be to add a Structures representative with the decision being made for it to be from Bridge Design. Barry said "State Bridge Engineer" would be changed to "Bridge Design Engineer" or the official title. The third recommendation is to add an ATMS representative. The official titles would be needed for the last two positions. Barry said the fourth recommendation is to add the Region Preconstruction Engineer with the wording being worked so both that position and the Region Director are from different regions.

- Barry said wording in various areas of the policy would have to be updated for these changes. He said the total membership number would be increased so the number required for voting would have to be increased. Two new positions are being added. The quorum number could be six. Barry said there is no impact on the procedure part of the policy.

- Barry asked if he should make the changes and bring the policy back next time.

- Richard asked about Jim's perspective as chairman on these changes. John said if Jim disagrees with the changes he can recall the item at the next meeting.

- Barry said the recommended changes to the submittal sheet that were discussed as part of earlier agenda items needed to be covered next.

- Barry said an implementation plan was suggested. Darrell said implementation/education. Barry said another area Darrell brought up earlier was EBS impact. Barry said the current submittal sheet, paragraph E for Minimum Sampling and Testing Guide impacts could be combined with the EBS requirement.
- There was a little initial reluctance. Barry said it would be a 1 and 2 under the paragraph heading. Darrell commented that when talking Electronic Business Systems (EBS) a lot of people are not clear on whom that would be. Karl commented about adding the implementation plan to this part.

- Barry said if the concepts are approved the wording can be worked out later for the submittal sheet. Barry said he would work with Darrell and Karl to iron out the wording.

- Barry said he thought Jim's concerns were discussed and covered.

Motion: Tim Biel made a motion to approve Policy 08A5-1 as discussed and modified. Seconded by Richard Clarke. Passed unanimously.

Randy commented on the wording of the Structures representative and that it is open enough so that Jim can put in whoever he wants in that slot. Barry said they have sufficient direction in what needs to be written for the update.

8. New Standard Specification and Standard Drawing Schedule (Agenda Item 8) – Presented by Barry Axelrod.

Barry said this item is a projected schedule for publishing new Standards. He said everything is covered in the submittal sheet so he wouldn't go into every detail. Barry said their recommendation is to wait until 2008 before coming out with a new set of Standards. He said there is not enough time left this year to come out with something for 2007 and have everyone happy with the result. Barry said if we start in January of the previous year or earlier a solid review of all specifications and drawings could be accomplished. All areas could then do a thorough review and make needed changes. He said one thing to keep in mind is all those changes have to come through the Standards Committee for approval. Changes and updates could be approved for implementation in the current Standards and therefore are included in the next version or just for the new version. Barry said this type of plan needs to be kept in mind any time a new version of the Standards is being considered.

Barry said the submittal sheet shows some percentages of what has changed so far, adding that we are good enough for a least another year. Barry said toward the end of this year they would look at things and decide if a new version is in fact needed for 2008. He said they would then put groups together to start the review and update process.

Barry said this is just for discussion and no vote is needed.

Barry went on to explain how current supplemental specifications are handled. He said those approved up to when the book is put together become the Standard. We start with zero supplemental specifications when the new book comes out.

Discussion points were:

- Darrell asked if everyone was pretty much in agreement with the proposal. Karl said he agreed, adding there are only six or seven more meetings before getting to the 2008 version. Randy commented saying don't procrastinate so we can't make it by 2008. Barry said if that is the goal, the Standards Section will take the lead and keep things on schedule.

- Darrell asked if we would use the same publishing company. Barry said they would have to go out for bids. Barry added that for the reprint they did because it was part of the initial contract.

- Randy asked Barry to submit the schedule to the Standards Committee for review. Barry said a lot of that is already in the submittal sheet. Randy asked that dates be put to that. Barry said it could also be posted on the Web so everyone could see the plan.

- There was no further discussion.

Action Item: Barry Axelrod to put a schedule together to track dates for implementation of new Standards for 2008.

9. Review of Assignment/Action Log (Agenda Item 9)

Darrell led the discussion of the action log.

- Item 1, Rumble Strips. Darrell commented on the policy. John said it was approved. Darrell said it now impacts several Standards. Barry said the policy was an action item but it was approved and implemented without ever coming back to the Standards Committee. Darrell said officially it has not been approved. Barry said the action item is still open. Barry said parts of the policy that was published conflicted with some Standards. Target date: June 2006 meeting.

- Item 2, Three-Legged/ Four-Legged Intersection. John said they are still on target for June. Target date: June 2006 meeting.

- Item 3, Supplemental Specification 00555M. John said Tracy Conti and Robert Hull are handling this item. Karl commented that this is related more to traffic control than it is limitation of operations. John said they are just waiting for guidance on how to continue. Barry said he didn't change the name of the item because he didn't know any status. Target date: None

- Item 4, Painted Cattle Guard. John said this was taken to UTRAC where they decided not to choose it for one of their projects. John said he then took it to Ab Wakil in Research. John said there is no current process on how to handle this type of item. Barry asked about a target date. John said it won't be back to Standards anytime soon because there is no definitive information to use to put together a Standard. The recommendation was to close and open at such time as more information becomes available. Closed.

- Item 5, Supplemental Specification to cover cast-in-place Concrete Drainage Structures. Supplemental Specification 02633 approved during this meeting. Closed.

- Item 6, Standards Committee membership issues. Policy updates approved during this meeting. Closed.

- The status report as handed out at the meeting follows:

Action Item Update for April 27, 2006 Standards Committee Meeting
(As of April 3, 2006)

Item 1, Rumble Strips: Item was due for this meeting. Policy already published. No coordination by the Standards Committee. No other information received in response to request.

Item 2, New Drawing of Three-legged and Four-Legged Intersection: Item not due until June 2006 meeting. No information received in response to request.

Item 3, Supplemental Specification 00555M, Prosecution and Progress, Limits of Operation: Due date changed at February 2006 meeting to open. No target date. No information received in response to request.

Item 4, Painted Cattle Guard issue to the Maintenance Operations Engineers. The target date is unknown. Item presented to UTRAC for action. No other information received in response to request.

Item 5, Supplemental Specification to cover cast-in-place concrete drainage structures. Combined with Section 02633. On current agenda for approval.

Item 6, Standards Committee membership issues. Taken to technical committee. Recommendation covered on current agenda.

10. Meeting Improvements (on-going agenda item) (Agenda Item 10). None.

11. Other Business:

Standard CADD Border Sheet: Item presented by Ed Rock. Ed said they are making changes to the standard roadway border. He handed out copies of the current and suggested sheets. He said there are no dramatic changes. There is no impact on the Standard Drawing border. Ed said the old border sheet had old and redundant information. The new sheet corrects this. He said new procedures make some of the entries obsolete. He said the changes more accurately reflect how we are doing business. Ed said they will discuss the changes with the Structures and Geotechnical people for use in those areas. There was no discussion.

Standard Sheet 1B and 1C. Possible removal. Follow up from April 28, 2005 meeting: Barry handed out a review of the options to include responses to questions from Jim, notes and submittal sheet from the April 28, 2005 Standards Committee meeting, and current comments from the April 13, 2006, CET meeting. Barry said the item first came up during the Standards Section's region visits in early 2005. Barry said based on comments from the four region visits and follow up coordination no one thought the sheets were needed. He said information and a recommendation to delete the requirement were brought to this Committee. Barry said at the April 28, 2005 meeting issues came up from Construction that indicated the sheets were needed. He said as a result the change was not approved.

Barry said a copy of the email that reopened this item is on page 3 and 3 of the handout. Barry said the issue was brought up by Troy Torgersen and sent to Jim. Barry said their responses to Jim's questions are in bold in the first part of the package.

Barry said there didn't seem to be a problem from their standpoint or from the designers. Barry said the issue only seems to be from the Construction area. He said he was not sure how much discussion is need now and that they were just presenting it now with more information coming at a later time.

Richard said that the Construction comments at the CET meeting pointed to false assumptions that Design needed the drawings in projects in order to get the correct Standard Drawings in projects. Richard and Barry both said Design had already indicated they did not need or want the drawings.

Richard discussed the Standards change process. He pointed out that Supplemental Specifications change the Standards while for drawings the changes are just posted to the drawing set. He said there is no separate book or posting like the Supplemental Specifications where you can easily see what was changed. He said the current implementation procedure may cause some confusion with the drawings. Richard said he thought the feelings were mixed among the Region Construction Engineers and the Resident Engineers. Darrell said he thought it was pretty clear as to their feelings.

Darrell said the discussion was that they would like to see them handled the same. Karl said it goes back to Barry's question about the need for the Index Sheets. Richard said the whole question is the Index Sheets. Karl said there are still other questions related to the Standard Drawings. Richard said the applicable Standard Drawings can still be put in the Plan Sets, but just like Standard Specifications all drawings apply. Richard said we do not pull out Standard Specifications. Karl commented about Contractors easily determining which drawings apply to a given Contract. Comment indicated that would be easy if the drawings were put in projects.

Barry said they were not ready to make any recommendation, but just wanted to introduce the issue to the Committee. Karl said it is a confusing issue on tracking the drawings, adding that the consensus was the Index Sheets could go whether you attached any drawings to the Plan Sets or not.

Barry discussed the current change process for Standard Drawings. He said Sheets 1B and 1C are part of each change. He said they also put in a listing of all Standard Drawings with the latest date in two of the four table of contents files (small plan sheets). Barry said part of their initial recommendation was to add that listing to the other two table of contents files. He said this listing has the same information that is on 1B and 1C. Barry said the only thing you would not have would be the area to put check marks on the 1B and 1C. He said that column could be removed from the other listing as well. Barry said you would still have a listing of every drawing with approval date in every Contract. Barry said that was their recommendation that was not approved. Barry added that when new or updated drawings at posted to the Web site the archive area has a copy of the modified drawings that were in effect before the applicable change. Barry said at any point in time you can go back and look at both the updated drawing and what was in effect just prior to the change.

Barry said if a drawing is removed the old drawing is available for review. He said all that is needed is a determination as to where the project falls in comparison to the issue of drawing changes. Barry said all the needed information is available on the Web site. Barry pointed out that Richard indicated earlier, all Standard Drawings apply on every project. Barry said the bid items tell the Contractor what to bid on.

There was no further discussion on this item.

Action Item: Richard Miller and Barry Axelrod to put team together to review the removal of Sheets 1B and 1C and make recommendation.

Darrell thanked Mont and Tyler for there participation on the Standards Committee, allowing the Committee to do a common sense check on changes to the Standards. Darrell went on to thank Richard and Barry for taking Standards to another level. He said great strides are being made.

Adjourned.

The next regular meeting of the Standards Committee has been scheduled for Thursday, June 28, 2006, at 8:00 a.m., in the 1st floor conference room of the Rampton Complex.

Approval of Minutes: The foregoing minutes were approved at a meeting of the Standards Committee held _____, 2006.

Assignment/Action Item Log

Date Initiated/Updated	Item #	Action	Assignments	Status	Target Date
June 27, 2002	1	Standard Drawing PV 8 (Rumble Strip)	Darrell to assign someone from Construction.	Open	June 2006 meeting
October 31, 2002			Richard Miller from Maintenance. Fred Doehring. Betty Purdie. Robert Hull to head the group.		
December 19, 2002		- Process being reviewed. Research looking into testing.	Robert Hull Stan Burns		
February 27, 2003		- A policy is to be developed over the next several months.	Robert Hull		
April 24, 2003		- No change	Stan Burns		
June 26, 2003		- No further updates. Target date changed.			
August 28, 2003		- Progress continuing. To work with Research.			
October 30, 2003		- Process continuing.			
December 18, 2003		- Still being worked.			
February 26, 2004		- No update			
April 29, 2004		- Jim to follow up with Research.			
June 24, 2004		-Research has study with University of Utah			
August 26, 2004		- Research study complete. Policy being written.			
October 21, 2004		- Waiting for BYU study results.			
February 24, 2005		- Still being reviewed. Target changed.			
April 28, 2005		- No change			
June 30, 2005		- No one present to discuss.			
August 25, 2005		- QIT working on a policy. Item being tracked as Rumble Strip Policy.	Traffic and Safety - Robert Hull		
October 27, 2005		- December meeting canceled. Target date updated.			

Date Initiated/Updated	Item #	Action	Assignments	Status	Target Date
February 23, 2006 April 27, 2006	1	**Item continued.** Standard Drawing PV 8 (Rumble Strip) - Policy approved. Drawing to be completed. - Policy approval discussed. Never brought to Standards for review and approval.	Traffic and Safety - Robert Hull		June 2006 meeting
August 28, 2003 October 30, 2003 December 18, 2003 February 26, 2004 April 29, 2004 June 24, 2004 August 26, 2004 October 21, 2004 February 24, 2005 April 28, 2005 June 30, 2005 August 25, 2005 October 27, 2005 February 23, 2006 April 27, 2006	2	A new drawing depicting the three-legged/four-legged intersection to be developed. - No change in status. - Target date set. - No change. - Being developed - No report. Not due until August. E-mail sent to SAF and RES. - No change except target date. - Still under development. Target date moved. - No change. Work priorities prevented further review. - No change - No one present to discuss. - Looking at three-legged intersection first. - Not due. No action required. - Reviewed by the Traffic Engineering Panel. Drawings being developed. - Still on target for June 2006.	John Leonard	Open	June 2006 meeting

Date Initiated/Updated	Item #	Action	Assignments	Status	Target Date
August 25, 2005 October 27, 2005 February 23, 2006 April 27, 2006	3	Supplemental Specification 00555M, Prosecution and Progress, Limits of Operation: Coordinate the required action to have the process placed in the proper location, to the detail necessary and bring the recommendation to the Standards Committee for approval. Item not ready. To be reviewed by the Operations Engineer. Target date updated. Direction being reviewed by upper management. Still being review by upper management for direction.	John Leonard Tracy Conti Robert Hull	Open	Open. No date set.
April 27, 2006	4	Update the supplemental specification and resultant changes to Standard Drawing GW 6 in accordance with the discussion.	Jim Baird	Open	June 2006 meeting.
April 27, 2006	5	Supplemental Specification 01452M, Profilograph and Pavement Smoothness. Review the supplemental specification and update in accordance with the discussion on measurement and manhole issues.	Karl Verhaeren	Open	June 2006 meeting.
April 27, 2006	6	New Standard Specification and Standard Drawing Schedule. Put a schedule together to track dates for implementation of new Standards for 2008.	Barry Axelrod	Open	June 2006 meeting.
April 27, 2006	7	Put team together to review the removal of Sheets 1B and 1C and make recommendation.	Richard Miller Barry Axelrod	Open	August 2006 meeting.

Closed Items From Last Meeting (April 27, 2006)					
Date Initiated/Updated	Prior Item #	Action	Assignments	Status	Target Date
October 27, 2005 February 23, 2006 April 27, 2006	4	Painted Cattle Guard issue to the Maintenance Operations Engineers. To be presented at UTRAC for further consideration. Target could be up to a year away. Not accepted by UTRAC. Closed until a time that more information becomes available.	John Leonard	Closed	Closed
February 23, 2006 April 27, 2006	5	Hydraulics to create a Supplemental Specification to cover the cast-in-place option to go along with the precast option. When that section is ready both will be brought back for approval. Supplemental Specification 02633, Concrete Drainage Structures approved.	Michael Fazio	Closed	Closed
February 23, 2006 April 27, 2006	6	Standards Committee membership issues. Take to the Technical Committee. Policy changes brought back to the next meeting for approval. Policy updated and approved	Jim McMinimee Barry Axelrod	Closed	Closed

Standards Committee Agenda Items Section

Submittal Sheets, Supplemental Specification Drafts, Standard Drawing Drafts, and other supporting data for the June 29, 2006 Standards Committee meeting follows.

Standards Committee Submittal Sheet

Name of preparer: Jim Baird
Title/Position of preparer: Right-of-Way Manager
Specification Title: Boundary Survey
Specification Number: 02896
Drawing Title: Right-of-Way Marker GW 6
Specification/Drawing Number: GW 6
Enter appropriate priority level:
(See last page for explanation) **3**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page. (http://www.udot.utah.gov/index.php/m=c/tid=303)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

The method of stamping and documenting Right-of-Way markers on record of survey maps has changed.

Drawing GW 6, note number 8.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

No change

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

No comments

ACEC Comments: (Use as much space as necessary.)

Comment returned stated there was no objection to the change.

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Region Right-of-Way managers

No comments

Consultants (as required) (Any additional contacts beyond “C” above.)

No comments

FHWA (To be accomplished as part of the two-week process before submitting to the Standards and Specifications Section for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)

No comments

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

N/A

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

N/A

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

N/A

3. Life cycle cost.

N/A

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

Way of doing business has changed to comply with Rule .

H. Safety Impacts?

N/A

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

N/A

Supplemental Specification
2005 Standard Specification Book

Section 02896M

BOUNDARY SURVEY

Delete Article 3.1, paragraph A and replace with the following:

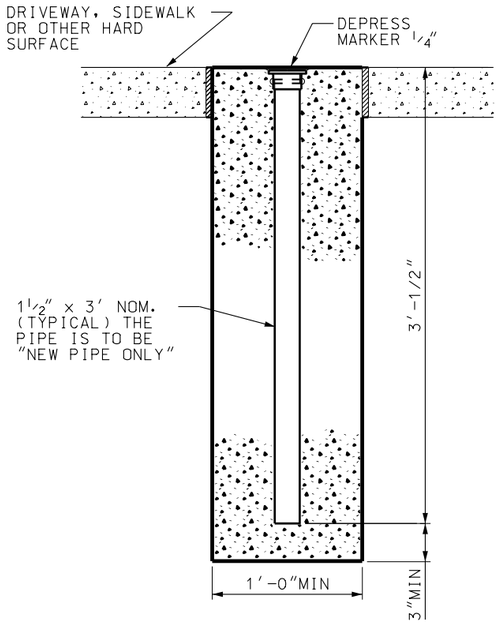
A. Place Right-of-Way Markers in accordance with GW series Standard Drawings. Stamp onto each Right-of-Way Marker:
   1. Right-of-Way marker number
   2. Exact control point mark location to within 0.01 feet (center punch or "dimple")

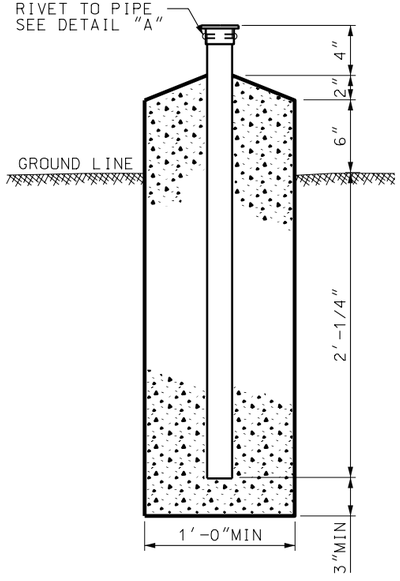
Add the following to Article 3.3, paragraph C:

7. On each record of survey map, tabulate right-of-way markers showing, right-of-way marker number, station, offset, elevation, and project coordinates.

Delete Article 3.3, paragraph E and replace with the following:

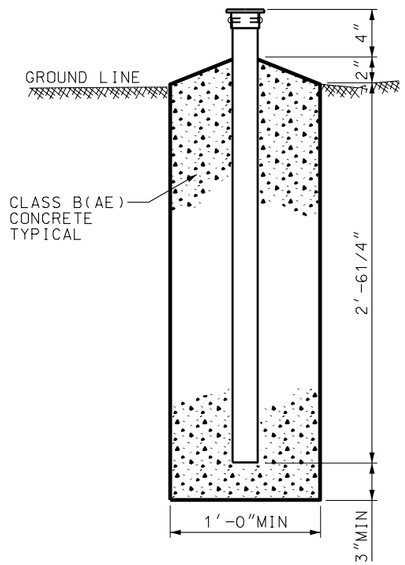
E. Deliver the survey plat to Engineer on a CD in MicroStation format.



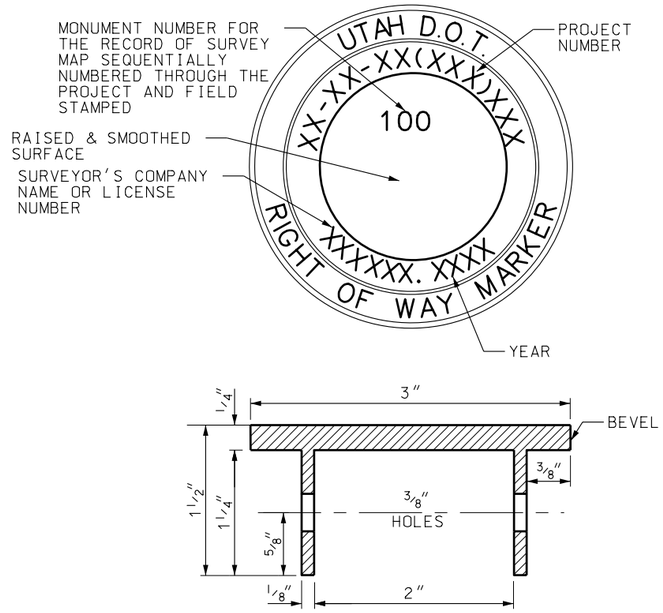


"A" "B"

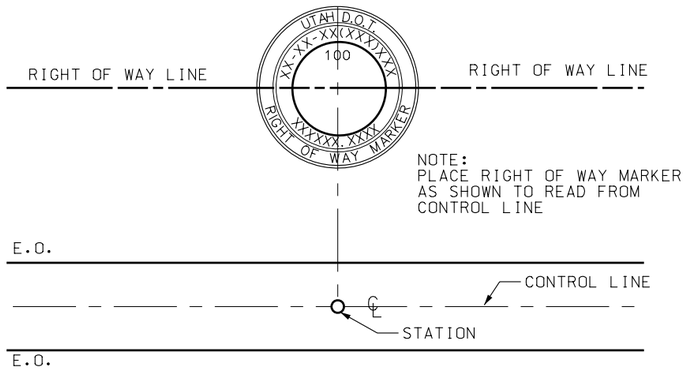
ALTERNATE INSTALLATIONS



STANDARD INSTALLATION



BRONZE CAP
DETAIL "A"



NOTES:

1. PLACE RIGHT OF WAY MARKERS AT EACH ANGLE POINT IN A RIGHT OF WAY LINE. PLACE RIGHT OF WAY MARKERS ON EACH RIGHT OF WAY LINE OPPOSITE THE PS, SC, CS AND ST OR OPPOSITE THE PC AND PT. WHERE THE RIGHT OF WAY PARALLELS THE CENTER LINE OF THE HIGHWAY AROUND A CURVE.
2. PLACE RIGHT OF WAY MARKERS IN ADDITION SO THAT NO INTERVAL WILL EXCEED 1000 FEET. PLACE INTERMEDIATE MARKERS PREFERABLY ON SECTION LINES OR INTERSECTING PROPERTY LINES.
3. GRIND TO A SMOOTH SURFACE ALL EXPOSED SURFACES OF THE BRONZE CAP.
4. DEPRESS ALL LETTERS MINIMUM OF 1/16".
5. USE 3/16" HIGH LETTERS AND FIGURES.
6. USE ALTERNATE "A" INSTALLATION WHEN PLACING TOP OF BRONZE CAP FLUSH WITH HARD SURFACE AREA.
7. USE ALTERNATE "B" INSTALLATION WHEN PLACING MARKERS IN HEAVY BRUSH OR FOREST LANDS.
8. ON THE RECORD OF SURVEY MAP TABULATE RIGHT-OF-WAY MARKERS SHOWING MARKER NUMBER, STATION, OFFSET, ELEVATION, AND PROJECT COORDINATES.

REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

RECOMMENDED FOR APPROVAL — JUNE 29, 2006 DATE
CHAIRMAN STANDARDS COMMITTEE APPROVED — JUNE 29, 2006 DATE
DEPUTY DIRECTOR

RIGHT OF WAY MARKER

STANDARD DRAWING TITLE

STD DWG
GW 6

DGN File:L:\Standard_Drawings\Imperial\2005\Working\General Road Work (GW)\gw06.dgn
16-MAY-2006

Standards Committee Submittal Sheet

Name of preparer: **Karl Verhaeren**
Title/Position of preparer: **Engineer for Construction**
Specification/Drawing/Item Title: **Profilograph and Pavement Smoothness**
Specification/Drawing Number: **Section 01452**

Enter appropriate priority level:
(See last page for explanation) **3**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
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2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

Specification 01452 provides for a smoothness incentive/disincentive on the final riding surface, computed on the basis of "sections," essentially defined as 0.1 lane mile(s). The definition also considers shoulders with design widths greater than 8.0 feet as separate "sections" in addition to the travel lanes.

The maximum incentive amounts provided for under Section 01452 are as follows:

HMA =	$2100,	$3000/lane mile
OGSC & SMA =	$7000,	$7500/lane mile
PCCP =	$8750,	$10000/lane mile

The lesser amounts shown above are for category II surfaces, the higher amounts are for category 1.

The proposed modification to the specification changes the definition of "section" by removing shoulders, and only considers traffic lanes as "sections." Shoulders greater than 6.0 feet are still measured for smoothness and shoulder measurements are included with the adjacent lane measurements. This change brings potential incentive/disincentive amounts in line with that offered by other State Highway Agencies.

Discussion of the proposed change at the April 27 Standards meeting led to concerns unrelated to the proposed change, and a request to clarify situations involving medians, as opposed to (median) turn lanes, and to address situations where manholes, valves, or other facilities may be located in the wheel path or trace path of the profile.

The committee desired that medians be included, similarly to traffic lanes, for purposes of measurement with respect to incentive/disincentive provisions.

Changes were made to the proposed supplemental specification to clarify the definition of class I surfaces, to include medians wider than 8.0 ft. Changes were also made to address the situation with manholes, valves, or other facilities – deviations created by these facilities are included in measurement when the facilities are adjusted as part of the contract and excluded when the contract doesn't require the adjustment of these facilities.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

No change

C. Stakeholder Notification for AGC and ACEC:

The proposed change was sent to the AGC and ACEC on March 23, 2006.
The revisions based on comments received at the April 27 Standards meeting were sent to the AGC and ACEC on May 1, 2006.

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

No comments received on original submittal.
Comments on revisions – No comments received as of June 5, 2006 on revisions sent out for review on May 1, 2006

ACEC Comments: (Use as much space as necessary.)

No comments received on original submittal.
Comments on revisions – No comments received as of June 5, 2006 on revisions sent out for review on May 1, 2006

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Construction Engineers

No comments received from the April 6, 2006 RCE meeting on original submittal.
Sent to RCEs again with revisions on May 1, 2006.

Contractors (Any additional contacts beyond "C" above.)

No comments.

Suppliers

No comments.

Consultants (as required) (Any additional contacts beyond "C" above.)

No comments.

FHWA (To be accomplished as part of the two-week process before submitting to the Standards and Specifications Section for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)

No comments received from original submittal.
Sent to FHWA again with revisions on May 1, 2006

Others (as appropriate)
No comments.

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

No effect to the MS&T requirements

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.
N/A

There is no change to overall project costs, as incentive/disincentives are accounted for in the contractor's bid, with unit bid prices being adjusted by the contractor based on the potential incentive/disincentive amounts expected to be earned/lost according to the incentive/disincentive provisions.

While still providing a substantial incentive/disincentive, the change will help with project cost control by reducing the difference in project bid cost vs. final cost, neglecting contract changes or modifications.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).
None

3. Life cycle cost.
N/A

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)
Better project cost control as described above.

H. Safety Impacts?
None

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

This modification has been used as a special provision in Region 4 on several contracts, primarily to reduce the maximum incentive available on interstate projects and bring the potential incentive/disincentive in line with the pavement smoothness incentive/disincentives offered by other DOTs.

Incorporates previously issued Supplemental Specification for Article 3.1, paragraph B1 and changes requested by the Standards Committee, noted above, at the April 27, 2006 meeting.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1	Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.
Priority 2	Upon posting, this impacts projects being advertised.
Priority 3	Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

Supplemental Specification
2005 Standard Specification Book

SECTION 01452M

PROFILOGRAPH AND PAVEMENT SMOOTHNESS

Delete Article 1.5, paragraph B and replace with the following:

B. The Department evaluates the surface by section, defined as:

1. ~~Traffic lane~~Class I surface, 0.1 mile in length, including adjacent shoulder ~~with a design width 8.0 ft or less, meeting the Class I description~~. (~~See~~ Refer to Table 1 for definition of Class I surfaces)
   a. Testing consists of a single trace measurement of each wheel path, defined as a continuous parallel line 2.5 ft inside the projected lane or median lines~~, of the traffic lane~~.
   b. Testing of adjacent shoulders having a design width greater than 6.0 ft consists of a single trace measurement, approximately centered in the shoulder~~, when the design width is 6.0 ft or greater~~. Do not test shoulders having a design width~~s less than~~ 6.0 ft or less.
   c. Determine the Profile Index (PI) by taking the average of all profile traces taken on the section.
      1) Include profile trace deviations from manholes, valves, and other facilities in the profile trace, when the contract requires the adjustment or reconstruction of these facilities.
      2) Exclude profile trace deviations from manholes, valves, and other facilities in the profile trace, when the contract does not include adjustment or reconstruction of these facilities.

~~2. Shoulder, 0.1 mile in length, with a design width greater than 8.0 ft, meeting the Class I description.~~
~~a.Testing consists of two profile traces, 2.0 ft inside each edge.~~
~~b.Determine the profile index (PI) by taking the average of profile traces taken on the section.~~

Delete Article 3.1, paragraph B1 and replace with the following:

1. Incentive/Disincentive applies only to Class I surfaces for each pavement section defined in this Section, Article 1.5, paragraph B.

a. Incentive/Disincentive is calculated according to Table 2, with partial sections prorated based on length.
b. Incentive/Disincentive does not apply to HMA surfaces on projects requiring OGSC or SMA.
c. Any section requiring grinding exceeding 20 yd^2 does not qualify for incentive. Disincentive remains applicable for sections where grinding exceeds 20 yd^2.

Delete Table 1 and replace with the following:

Table 1
Surface Requirements

Pavement Category	Class 1 Surface		Class II Surface	
	Section PI	Profile Deviation	Section PI	Profile Deviation
Category	**in/mi**	**in/25ft**	**in/mi**	**in/25ft**
1	5	0.3	N/A	0.3
2	7	0.3	N/A	0.3
Category 1	National Highway System and Truck Routes (See Section 02741, Table 11) and all other routes with surfaces having three or more opportunities for improving the ride.*			
Category 2	All other routes incorporating single lift overlays with not more than two opportunities for improving the ride.*			
Class I	Surfaces longer than 1000 ft in length consisting of all ~~through~~ traffic and climbing lanes, passing lanes, acceleration and deceleration lanes~~,~~ ~~shoulders~~, ramps, medians wider than 8.0 ft, and turn lanes. ~~longer than 1000 ft, including~~ Includes bridges and bridge approach slabs with final riding surfaces placed ~~on~~ as part of the contract. ~~Excluded~~ Excludes ~~are~~ horizontal curves having a centerline radius of curvature less than 900 ft and areas within the superelevation transitions to these short radius curves.			
Class II	Surfaces consisting of all tapers, road approaches, mainline pavement sections with posted regulatory speeds less than 35 MPH, pavement within 15 ft of bridge decks and approach slabs not paved as part of the ~~project~~contract, pavement to a point 50 ft beyond the paving limits of the project, and all other surfaces not included in the Class ~~1~~ I definition.~~and surfaces excluded due to horizontal curves.~~			

* Each opportunity to improve the ride is one of the following: Placing a gravel or treated base course, OGSC, SMA, rotomilling, cold recycling, and each lift of paving. Leveling is not considered ~~as~~ an opportunity to improve the ride.

Standards Committee Submittal Sheet

Name of preparer: **Karl Verhaeren/Larry Gay**
Title/Position of preparer: **Engineer for Construction/Region Four Materials Engineer**
Specification/Drawing/Item Title: **Materials Quality Requirements**
Specification/Drawing Number: **Section 01455**

Enter appropriate priority level:
(See last page for explanation) **3**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page. (http://www.udot.utah.gov/index.php/m=c/tid=303)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

To clarify materials requirements with respect to Department acceptance procedures, to more clearly define contractor requirements related to Department furnished materials sources, to correct errors in the current standard, to simplify testing requirements by eliminating the connection to contract advertisement dates, and to clarify the process for certificates of compliance.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

No change

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)
Sent to AGC on May 1, 2006
No comments received as of June 5, 2006

ACEC Comments: (Use as much space as necessary.)
Sent to ACEC on May 1, 2006
Comments from Tyler Yorgason received on May 17, 2006

Karl,

A couple of comments regarding the proposed Supplemental Specification 01455:

1. Paragraph 1.6.E (and 1.6.H) refers to "the agreement with the property owner." Should such an agreement be specifically required and defined earlier in the specification, maybe in 1.5.B?

2. Paragraph 1.10.F refers to the project's environmental document. If I am not mistaken, in the past it seems like it has been the designer's responsibility to ensure that any applicable requirements or commitments from the environmental document are written into the contract specifications. Are the environmental documents typically available to the contractor? Are they intended to be included in contracts in the future?

3. Subparagraph 1.8.1.a states that photocopies, faxes and electronic PDF files are acceptable formats for submission of Certificates of Compliance. I believe that there has been a substantial push in the last year or so by the Department requiring original signed Certificates. Does this this latest 01455 reflect a reversal in the Department's current policy? Gathering original certs seems to require much more work and time than it should.

Thanks for the chance to comment on this Supplemental Specification,

Tyler Yorgason P.E.
Civil Science, Inc.
3160 W. Clubhouse Drive
Lehi, Utah 84043

Revisions were made to the proposed specification addressing the above comments

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Construction Engineers
Sent to RCE group on May 1, 2006
No comments received

Contractors (Any additional contacts beyond "C" above.)

Suppliers

Consultants (as required) (Any additional contacts beyond "C" above.)

FHWA (To be accomplished as part of the two-week process before submitting to the Standards and Specifications Section for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)
Sent to FHWA on May 1, 2006

Others (as appropriate)
Changes were discussed with the Region Materials Engineers (RMEs) at their meeting on April 6, 2006. Final draft sent to the RME group on May 1, 2006.

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

No effect to the MS&T requirements

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.
   N/A

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).
   N/A

3. Life cycle cost.
N/A

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

Simplifies acceptance testing and frequency process for field crew lab personnel by not having different requirements at a point in time due to contract advertisement date.

Simplifies process for contractors in obtaining material from UDOT furnished sources by eliminating the need for the contractor to obtain environmental clearances on Department sources.

Simplifies/clarifies process for Certificates of Compliance.

H. Safety Impacts?
N/A

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.

Priority 2 Upon posting, this impacts projects being advertised.

Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

Supplemental Specification
2005 Standard Specification Book

SECTION 01455

MATERIAL QUALITY REQUIREMENTS

Delete Section 01455 in its entirety and replace with the following:

PART 1 GENERAL

1.1 RELATED SECTIONS

A. Section 01355: Environmental Protection

1.2 REFERENCES

A. UDOT Materials Manual of Instruction Part 8

B. UDOT Minimum Sampling and Testing Requirements ~~Manual~~

C. U. S. Code of Federal Regulations

1.3 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS

A. Use only materials that meet contract requirements.

B. Notify the Engineer in writing of the proposed source of materials to be used prior to their delivery.

~~C. Materials can be conditionally approved at the supply source.~~

~~D~~C. Correct or remove materials that fail to meet contract requirements.~~Correct materials to the satisfaction of the Engineer if materials are conditionally approved but fail to meet contract requirements or remove the materials.~~

D. Use new materials for the work unless otherwise specified.

E. Pay all related costs, including those for haul distance and for exploring and developing sources.

1.4 ~~LOCAL OPTIONAL MATERIAL SOURCES –~~ DEPARTMENT FURNISHED MATERIALS SOURCES

A. Possible sources of local optional materials may be ~~designated~~available.

1. Determine the amount of equipment and work required to produce a material meeting the Specifications using these sources.
2. Expect variations in both quantity and quality.
3. ~~Procure material from designated portions of the deposit.~~
4. ~~Material may be rejected if it is unacceptable or fails to meet contract requirements.~~

B. Specific information about ~~optional material sites and~~the location of possible sources is ~~usually available for inspection~~available at the Region Materials Lab. ~~Sources and sites are those either identified in Contract Documents or within the vicinity of the project, including aggregate quality test or quality control test results from previous projects where the sources or materials sites may have been used or investigated.~~

1. ~~This information is made available to prospective bidders upon request for their inspection.~~
2. By making this information available, the Department does not represent that a bidder should ~~necessarily~~ expect to produce materials corresponding with those previously produced by others, or that the Contractor may expect to produce acceptable materials based upon the ~~Contractor's~~ interpretation of ~~test data~~information, including any quality test information.

~~C. The Department may acquire the right to take and make materials available from designated sources, including the right to use the property as specified, or for plant site, stockpiles, and haul roads. The Contract defines acquisition and rights provided for this procedure.~~

C~~D~~. Perform required quality tests using a ~~UDOT qualified~~ laboratory qualified by UDOT. Submit copies of test reports to Engineer.

1. The Engineer may require additional samples for inspection and testing before authorizing use of the material.
2. Obtain Engineer's written approval to use material based on Contractor's quality test results.

D. Prepare materials site plans that show in detail the line and grades to which materials are to be removed.

1. Obtain Engineer's written approval of the materials site plans before removing any material.

E. Strip and stockpile topsoil prior to removing any materials.

1.5 ~~LOCAL OPTIONAL MATERIAL SOURCES –~~ CONTRACTOR FURNISHED MATERIALS SOURCES

A. Obtain required Environmental Clearances. Refer to ~~in accordance with~~ Section 01355.

B. Acquire the rights to ~~take~~ remove materials ~~from sources other than those designated in the Contract~~ and enter into agreement with owner that specifies requirements for grading and reclamation after removing materials.

C. Locate, where ~~practicable~~practical, borrow, gravel, and quarry materials sites where they are not visible from the highway.

~~D. Pay all related costs, including those for haul length~~ distance ~~and for exploring and developing sources.~~

~~E. Use material from other than Department-furnished sources only after Department tests indicate that the material is of equal or better value than the Department furnished source, and after its conditional acceptance is received.1. Notify the Engineer in writing of the choice and location of aggregate source.~~

~~2. The Department obtains and processes the additional samples to determine the suitability of the aggregate.~~

~~3. Allow 30 calendar days for sampling and testing after the Engineer has been notified and the number of test sites has been determined.~~

~~F~~D. Perform required quality tests using a ~~UDOT qualified~~laboratory qualified by UDOT. Submit copies of test reports to Engineer.

1. The Engineer may require additional samples for inspection and testing before authorizing use of the ~~source~~material.~~5. Engineer determines the location and necessary number of test sites, with three test sites and samples per aggregate source as a minimum.F. Pay 50 percent of the Department's sampling and testing cost if the material source is found to be unacceptable for use as a particular contract bid item.~~
2. Material may be rejected if it is unacceptable or fails to meet contract requirements.

~~G. The Department does not allow any extension of the original contract time to accommodate Department testing of non-designated sources.~~

~~H~~E. ~~For non-commercial pits, prepare~~ Prepare materials site plans that show in detail the line and grades to which materials are to be removed.

1. Obtain Engineer's ~~evaluation and~~ approval of the materials site plans ~~as to their physical, environmental, and ecological effect~~ before removing any materials.

~~I~~F. Strip and stockpile topsoil prior to removing any materials.

1.6 FINISHING ~~LOCAL OPTIONAL~~ MATERIAL SOURCE SITES

A. Finish all (public ~~or~~ and private) material source sites to ~~leave a pleasing appearance~~the satisfaction of the Engineer.

B. Grade to drain without causing excessive erosion and without altering the natural drainage courses.

C. Locate waste sites in areas that are least visible from public view. Spread waste material to obtain a natural appearance.

D. Remove trash. Remove, bury or distribute excess materials over the disturbed areas when excavation has been completed.

E. Perform required grading and reclamation, as required under the agreement with the property owner, when ~~work to remove materials~~removal of material is complete~~d~~ and before spreading topsoil.
   1. Avoid vertical cuts and sharp corners.
   2. Grade side slopes to achieve a natural appearance.
   3. Abandon and obliterate haul roads.

F. Spread topsoil over the excavated area ~~and seed all areas~~ disturbed by construction operations, including obliterated haul roads, and seed all areas with ~~a~~ grass or grasses adaptable to the area and approved by the Engineer and property owner. Perform seeding under the contract requirements for Seeding, including mulching.

G. Finishing local material source sites, including seeding and mulching, is not measured or paid for separately and is considered incidental to other items of work.

H. Prior to final ~~project~~ acceptance, provide the Engineer with a written release from the property owner indicating that all conditions of the agreement are satisfied.

1.7 SAMPLES, TESTS, AND REFERENCED CITED SPECIFICATIONS

A. Incorporate into the work only material that ~~the Department~~is ~~has~~ inspected, tested, and accepted by the Department. Pay to remove unacceptable materials from the site at no expense to the Department.

B. The Department ~~test methods are~~uses the most ~~recent~~ current ~~minimum sampling and testing requirements~~Minimum Sampling and Testing Requirements, Materials Manual of Instruction Part 8, and ~~standard test methods of the Department,~~ AASHTO or ASTM standards.~~tests in effect at the time the job is advertised~~.

C. The Department performs acceptance testing at its expense, unless otherwise designated.

~~D. Test method precedence is as follows:~~

~~1. UDOT Materials Manual of Instruction Part 8Minimum Sampling and Testing Requirements Manual~~

~~2. AASHTO~~

~~3. ASTM~~

~~E. A Department representative performs or observes sampling and sample splitting of materials.~~

F. The Department ~~can~~ may inspect, ~~re~~test, and reject materials at any time ~~conditionally accepted at the source~~.

~~1. Materials designated for use can be inspected, tested, or rejected before or during incorporation into the work.~~

1~~2~~. Copies of any or all test results are available upon request.

G. The Department does not allow any extension of contract time for, or as a result of, any testing.

G. Pay for retesting of materials made necessary by the Contractor's activities.

H. All Department and Consultant/Contractor materials laboratories~~,~~ and materials test technicians~~, and construction technician inspectors~~ must be qualified under the requirements of the UDOT Materials Manual of Instruction Part 8, in order to perform material sampling and testing ~~and construction inspection on State, Federal-Aid, local government and maintenance projects~~.

1.8 CERTIFICATE OF COMPLIANCE

A. The Contract or the ~~Department's current minimum sampling and testing requirements~~UDOT Minimum Sampling and Testing Requirements designate~~s~~ manufactured materials and assemblies that can be incorporated in the work, if accompanied by ~~C~~ccertificates of ~~C~~ccompliance from the manufacturer.

1. ~~A Certificate of Compliance c~~Clearly identify~~ing the~~ each lot of certified materials or assemblies delivered to the work, and ensure that the certificate of compliance accompanies each delivery and identifies the specification requirement satisfied ~~must accompany each lot of materials or assemblies delivered to the work~~.

~~2.~~ 1.~~The Certificates of Compliance must state that the materials or assemblies provided fully meet the requirements of the Contract, and must be signed by a representative of the manufacturer who is in a position to legally bind the manufacturer.~~Ensure the certificates of compliance state

the material or assemblies comply with applicable requirements of the Contract, and are signed by a manufacturer's representative in a position to legally bind the manufacturer.

a. Photocopies, faxes, and electronically submitted PDF files are acceptable.

B. The Department may sample and test materials or assemblies used on the basis of ~~C~~certificates of ~~C~~compliance and reject ~~or accept~~ if ~~it is~~ determined not to meet contract requirements.

C. Obtain the required certificate of compliance form from the Engineer.~~The form and distribution of the C~~certificates of ~~C~~compliance ~~form is~~ are as ~~found in the Contract or the *UDOT Minimum Sampling and Testing Requirements* Department's Minimum Sampling and Testing Requirements Manual.~~

1.9 PLANT INSPECTION

A. Department may inspect materials at the acquisition or manufacturing source for compliance with specified manufacturing methods. The Department obtains and tests material samples for compliance with quality requirements.

B. Cooperate fully and assist the Engineer during the inspection.~~Meet the following conditions if inspection is at the plant.~~

~~1. Cooperate fully and assist the Engineer during the inspection.~~

~~2~~1. Allow the Engineer full access to all parts of the plant used to manufacture or produce materials.

~~3~~2. Provide and maintain adequate safety measures.

~~4~~3. Equip crushing or screening facilities with automatic or semiautomatic mechanical sampling devices.

~~C. The Department can retest materials conditionally approved at the source prior to incorporation into the work.~~

C~~D~~. The Department rejects material not meeting contract requirements.

1.10 STORAGE AND HANDLING OF MATERIALS

A. Store and handle materials to preserve their quality and fitness for the work.

B. Transport bulk materials in a manner to prevent loss or segregation after loading and measuring.

C. Store materials so they can be easily inspected and retested ~~in accordance with this Section~~.

D. Obtain approval from the Engineer to store materials ~~and~~ or ~~Contractor's plant and~~ equipment within the right-of-way.

E. Additional storage space is at the Contractor's expense and option.
   1. Obtain owner's or lessee's written permission before storing material on private property.
   2. Furnish copies of the permission to the Engineer, if requested.

F. Pay to restore storage and plant sites to their original condition or to the satisfaction of the Engineer~~, or as required by the environmental document or owner~~.

1.11 UNACCEPTABLE MATERIALS

A. Engineer rejects all materials not meeting the contract requirements.

B. Remove unacceptable materials immediately from the project site unless the defects are corrected and approved by the Engineer or accepted at a reduced price.

1.12 DEPARTMENT FURNISHED MATERIALS

A. Deliver or make available Department furnished materials at the locations specified in the Contract. Receive, inventory, store, protect, distribute and install Department-furnished material.

B. Include the cost of handling and placing Department furnished materials in the contract price for the item for which the materials are used.

C. Contractor is responsible for all materials received. -The Department deducts from any monies due:
   1. For any shortages, deficiencies, and damage that may occur to the material after delivery.
   2. The demurrage charges resulting from failure to accept the material at the designated time and point of delivery.

1.13 BUY AMERICA

A. Federal-aid projects are subject to *Title 23, U. S. Code of Federal Regulations,* ~~Section~~ Part 635.410, Buy America Requirements.
   1. Check the appropriate box on the bid proposal indicating the intent to use steel or iron or both of 100 percent domestic supply, or with some foreign supply.

2. If neither box is checked, the Department considers the bid a bid for furnishing domestic steel and iron, and uses only domestic steel and iron in the Contract.
3. The Department awards the Contract to the bidder who submits the lowest total contract bid based on furnishing domestic steel and iron unless the total contract bid exceeds the lowest total contract bid based on foreign steel and iron by more than 25 percent.

B. To be considered domestic, all steel and iron used and all products manufactured from steel and iron must be produced in the United States.
1. All manufacturing processes, including application of a coating, of these materials must occur in the United States.
2. Coating includes all processes that protect or enhance the value of the material to which the coating is applied. The material applied, as a coating is not covered under Buy America.

C. If 100 percent steel and iron is furnished, provide a written certification that all contract items using steel and iron are of domestic supply.

D. The above requirement does not preclude a minimal use of foreign material, provided the cost of material used does not exceed one-tenth of one percent (0.1 percent) of the total contract amount or $2,500 whichever is greater.

1.14 CONVICT PRODUCED MATERIALS

A. Federal-aid projects are subject to *Title 23, U. S. Code of Federal Regulations,* ~~Section~~ Part 635.417, Convict Produced Materials.

B. Materials produced after July 1, 1991, by convict labor may only be incorporated in a Federal-aid highway construction project if such materials have been:
1. Produced by convicts who are on parole, supervised release, or probation from a prison, or
2. Produced in a qualified prison facility and the cumulative annual production amount of such materials for use in Federal-aid highway construction does not exceed the amount of such materials produced in such facilities for use in Federal-aid highway construction during the 12-month period ending July 1, 1987.

PART 2 PRODUCTS Not used

PART 3 EXECUTION Not used

END OF SECTION

Standards Committee Submittal Sheet

Name of preparer: **Stan Adams; Karl Verhaeren**
Title/Position of preparer: **Deputy Construction Engineer; Engineer for Construction**
Specification/Drawing/Item Title: **Environmental Controls**
Specification/Drawing Number: **Section 01571**

Enter appropriate priority level:
(See last page for explanation) **3**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page. (http://www.udot.utah.gov/index.php/m=c/tid=303)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

Sections 01561 - Temporary Environmental Fence, 01571 - Temporary Environmental Controls, and 01574 - Environmental Control Supervisor, deal with similar environmental issues. In addition, Department special provision (01571S) is indicated for use on projects intended to have lesser requirements than the standard. Within this group of specifications, there are conflicts that cause confusion in attempting to understand and interpret the requirements. The contractor is required to review several specifications to determine responsibilities relevant to these issues, which leads to confusion in interpretation.

The reason for the proposed change is to:
1) **Eliminate redundant or repetitive information, procedures, requirements, and direction among the three sections.**
2) **Place all of the environmental related issues of the sections in a single section to allow the contractor and Department personnel to have clear and concise information in one place.**
3) **Eliminate the need for the Department special provision.**

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

Change(s) to the M&P document/bid system items:

~~Section 01561: Temporary Environmental Fence~~

#	~~015610010~~	~~Temporary Environmental Fence~~	~~Feet~~

~~Section 01574: Environmental Control Supervisor~~

#	~~015740010~~	~~Environmental Control Supervisor~~	~~Lump Sum~~

(New items):

Section 01571: Environmental Controls

#	015710150?	Temporary Environmental Fence	Feet

#	015710160?	Environmental Control Supervisor	Lump Sum
	Amount Paid		**When Paid**
	25% of the bid item amount		With first estimate
	Remaining portion of bid item paid as a percentage of the contract completed		With each subsequent estimate

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)
Distributed for comments on May 24, 2006.
No comments received as of June 7, 2006.

ACEC Comments: (Use as much space as necessary.)
Distributed for comments on May 24, 2006.
No comments received as of June 7, 2006.

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

In-house coordination has been with Karl Verhaeren, Engineer for Construction; Terry Johnson, Central Environmental Landscape Architect; Shane Marshall, Central Environmental Engineer; Jared Barton, Region 4 Landscape Architect. All comments received were implemented within the proposed specification.

Construction Engineers
In-house coordination has been with Dennis Simper, RCE, Region 1; Rob Wight, RCE, Region 2; Scott Andrus, RCE, Region 3, and Clark Mackay, RCE, Region 4. The email was sent out on May 24, 2006.
Comments were received from Rob Wight and Clark Mackay. These comments were incorporated within the changes to the specification or rejected with explanation.

Contractors (Any additional contacts beyond "C" above.)

Suppliers

Consultants (as required) (Any additional contacts beyond "C" above.)

FHWA (To be accomplished as part of the two-week process before submitting to the Standards and Specifications Section for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)

Sent to FHWA for comments on May 24, 2006.
No comments received as of June 7, 2006.

Others (as appropriate)

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

No impacts or changes

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.
   N/A

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).
   N/A

3. Life cycle cost.
   N/A

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

Reduction in the number of specifications related to environmental issues the Contractor is required to review and understand in order to bid and construct the project. This reduces the potential for misunderstanding or misinterpreting information. All requirements are included in one specification in a logical, complete and concise manner. The need to include a special provision within the contract documents when an ECS is not specified will be unnecessary and eliminate the need for the Department special provision.

H. Safety Impacts?
N/A

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.
Feedback from the contracting community has indicated that there's been confusion concerning environmental compliance issues because one or more of the specifications has overlapped or contradicted others, and interpreting the information has been confusing and cumbersome. Redundancy concerning common environmental procedures, practices and requirements within several specifications has made it difficult not only for the contractor to follow, but for Department personnel as well. It has also been necessary for a Department special provision to be included in the contract when an ECS is not required. Use of a special provision to address the situation will not be necessary.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1	Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.
Priority 2	Upon posting, this impacts projects being advertised.
Priority 3	Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

Supplemental Specification
2005 Standard Specification Book

SECTION 01571

~~TEMPORARY~~ ENVIRONMENTAL CONTROLS

Delete Sections 01561, 01571, and 01574 in their entirety and replace with the following:

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Requirements for controlling erosion ~~on the construction site~~ and ~~diminish~~ reducing ~~the amount of~~ sediment leaving the construction site~~,~~ and ~~related~~ areas under the Contractor's control.

B. Requirements for installing, inspecting, maintaining, and removing temporary erosion control measures.

~~B.~~ C. ~~When an Environmental Control Supervisor (ECS) is specified and included as a bid item in the contract, this section will include a description of the r~~Responsibilitiesr Requirements ~~of the Contractor's Environmental Control Supervisor (ECS) to administer environmental compliance on the project.~~ when an Environmental Control Supervisor (ECS) is included as a bid item in the proposal.

D. Materials and procedures for installing and removing temporary environmental fencing.

1.2 RELATED SECTIONS

A~~E~~. Section 01355: Environmental Protection ~~(only when an ECS is specified and included as a bid item in the contract.~~

B~~A~~. Section 02373: Riprap

C. Section 02376: Erosion Control Blankets/Channel Liners

D~~B~~. Section 02610: Pipe Culverts

E~~C~~. Section 02613: Culvert End Sections

~~D. Section 02922: Seed, Turf Seed, and Turf Sod~~

F. Section 02911: Mulch

1.3 REFERENCES

A. AASHTO M 281: Steel Fence Posts and Assemblies, Hot Wrought

B. AASHTO M 288: Geotextile Specifications for Highway Applications.

C. Storm Water Pollution Prevention Plan (SWPPP)

D. Utah Storm Water General Permit for Construction Activities. ~~(Only when an ECS is specified and included as a bid item in the contract).~~

1.4 SUBMITTALS ~~(only when an ECS is specified and included as a bid item in the contract).~~

A. Prepare and submit a Notice of Intent (NOI) for Storm Water Discharges associated with Construction Activity to the Division of Water Quality at the Utah Department of Environmental Quality (DEQ) along with a signed copy of the NOI to the Engineer, when disturbing one or more acres. NOI forms can be completed online at Division of Water Quality website. Refer to: http://www.udot.utah.gov/index.php/m=c/tid=719.

1. At the end of construction, submit a Notice of Termination (NOT) form to the Division of Water Quality to terminate the permit, along with a signed copy to the Engineer.

B. Submit certification to the Engineer that the ECS has completed and passed the examination for UDOT's Environmental Control Supervisor training when the contract proposal includes a bid item for Environmental Control Supervisor (ECS). Contact the UDOT Environmental Division for more information.

~~1.5 ECS QUALIFICATIONS (only when an ECS is specified and included as a bid item in the contract).~~

~~A. Designate an Environmental Control Supervisor (ECS) to work directly with the Department ECS designated by the Engineer. The ECS will attend UDOT's Environmental Control Supervisor training and pass the examination.~~

~~B. Knowledge of erosion control principles and best management practices for roadway construction sites.~~

~~C. Knowledge of the laws surrounding environmental clearances and how to obtain~~

~~these clearances required under Section 01355.~~

~~D. Be sufficiently knowledgeable to understand the significance and implementation of environmental plans, details, and specifications.~~

~~**1.6 NON-PERFORMANCE (only when an ECS is specified and included as a bid item in the contract).**~~

~~A. Damages are assessed against the Contractor for non-performance in the amount of $500.00 for each calendar day, or portion thereof, the project is not in compliance with all required permits and regulations. If the Contractor remains not in compliance after three days, the damages assessed are increased to $1,000 per day and increased to $1,500 per day after seven days. Fines issued by regulatory agencies against the Department for Contractor non-compliance will be added to the damages assessed to the Contractor.~~

~~B. No extension of contract time allowed for any project delay resulting directly or Indirectly from a violation of project environmental requirements.~~

~~1.4~~1.5 TYPES

Refer to EN series Standard Drawings ~~for all types~~.

A. Check Dam:
   1. A temporary fiber roll or stone structure ~~that is~~ placed across a ditch to intercept and ~~pond~~ trap sediment ~~laden runoff, thereby reducing the water velocity and allowing suspended sediment to settle~~. Construct~~ed~~ so water will flow over a low point in the middle of the dam and not around the sides.

B. Silt Fence:
   1. A geotextile fabric fence ~~installed~~ to intercept and ~~pond~~ trap sediment ~~laden sheet flow runoff allowing suspended sediment to settle~~.

C. Slope Drain:
   1. A polyethylene pipe placed on a slope ~~that~~ to collect~~s~~ and transport~~s~~ storm runoff down the face of a slope ~~and is used~~ until permanent drainage facilities are installed or vegetation growth is adequate.

D. Temporary Berm:
   1. A ridge of compacted soil, with or without a shallow ditch, ~~that~~ which diverts storm runoff from a ~~recently constructed~~ slope to a controlled release point.

E. Drop- inlet Barrier:

1. A fiber roll, silt fence, or stone barrier placed around a drop- inlet that intercepts and ponds traps sediment. laden runoff allowing suspended sediment to settle. If the pond height reaches the top of the barrier, water flows over the barrier and into the drop-inlet.

F. Pipe Inlet Barrier:

1. Consists of a A horseshoe-shaped barrier protecting a pipe inlet that intercepts and ponds traps sediment laden runoff before it enters a the pipe allowing suspended sediment to settle.

G. Curb Inlet Barrier:

1. A protective barrier placed across a curb inlet that intercepts and ponds traps sediment laden runoff before it enters a the curb inlet.

H. Sediment Trap:

1. An excavated basin, usually installed at low points on a construction site, that intercepts and ponds traps sediment laden concentrated flows allowing suspended sediment to settle. Location determined by the Engineer.

I. Stabilized Construction Entrance:

1. A layer of rock placed at a construction site entrance that removes mud from vehicle tires before they leave the construction sitetracking and drive onto a paved road.

J. Straw Bale Barrier:

1. Consists of straw Straw bales placedbutted end to end and used in active construction areas where a silt fence would fail. Installed to intercept and pond trap sediment laden sheet flow runoff allowing suspended sediment to settle.

K. Temporary Environmental Fence

1. A visual barrier used to delineate and prevent encroachment on sensitive areas.

1.6 PAYMENT PROCEDURES

A. Payment for the items associated with this section includes all costs for labor, equipment, and materials for installation, inspection, maintenance, and removal as required.

B. Liquidated Damages

1. Liquidated damages are assessed against the Contractor in the amount of $500.00 for each calendar day, or portion thereof, the project is not in compliance with all required permits and regulations.

a. If the Contractor remains not in compliance after three days, the damages assessed are increased to $1,000 per day and increased to $1,500 per day after seven days.

2. Fines issued by regulatory agencies against the Department are added to the liquidated damages assessed to the Contractor.

3. No extension of contract time is allowed for any delay resulting directly or indirectly from a violation of environmental requirements.

PART 2 PRODUCTS

2.1 MATERIALS

A. Check dams:

1. Fiber Roll:

a. Fiber Roll: Contact Engineer for currently ~~A~~approved ~~P~~products ~~List of Fiber Roll Products~~. ~~Approved list is updated annually.~~

b. Wood stakes: commercial quality lumber 2-inch square (nominal) by 3 feet.

c. Channel Liner: Contact Engineer for currently ~~A~~approved ~~P~~products ~~List of Channel Liners~~. ~~Approved list is updated annually.~~

2. Stone: Well-graded within 2 to 6 inches in diameter.

B. Silt Fence:

1. Silt Fence Fabric: See AASHTO M 288 (Table 6 – Temporary Silt Fence Property Requirements).

2. Wood Post: commercial quality lumber, 2-inch square (nominal) by 4 feet ~~in length~~.

3. Fasteners: Staples, wire, zip ties, or nails sufficient to maintain ~~the~~ fabric~~'s~~ attachment to post.

C. Slope Drain:

1. Pipe Culverts: Refer to Section 02610.

2. End Section: Refer to Section 02613.

3. ~~9 inch~~ Loose Riprap: Refer to Section 02373.

4. Wooden stakes: commercial quality lumber 2-inch square (nominal) by 3 feet.

D. Temporary Berm:

1. Existing Soil.

E. Drop~~-~~ Inlet Barriers:

1. Fiber Roll: Contact Engineer for currently approved products.~~Refer to this Section.~~

2. Stone: Well-graded within 2 to 6 inches diameter.
3. Silt- Fence: See AASHTO M 288 (Table 6 – Temporary Silt Fence Property Requirements).Refer to this Section.
   a. Wood stud: 2 inches x 4 inches (nominal).

F. Pipe- Inlet Barrier:
1. Stone: Well-graded within 2 to 6 inches in diameter.
2. Fiber Roll: Contact Engineer for currently approved products.

G. Curb Inlet Barrier:
1. Concrete Building Blocks.
2. Stone: Well-graded within 2 to 6 inches diameter
3. Wire Mesh: 0.5 inch by 0.5 inch openings.
4. Wood stud: 2 inches x 4 inches (nominal).

H. Sediment Trap:
1. 9 inch Loose Riprap: Refer to Section 02373.

I. Stabilized Construction Entrance:
1. Stone: Well-graded within 2 to 3 inches in diameter.

J. Straw Bale Barrier:
1. Standard Straw Bales: Obtained from weed free fields that have been certified by the Utah Department of Agriculture.

K. Temporary Environmental Fence
1. Fence Fabric
   a. Polyethylene, high-density, UV stabilized
   b. Width: 4 ft minimum
   a.Tensile Strength: capable of maintaining an upright position through construction
   b.Fabric pattern: sufficient to create a durable visual barrier
   c. Color: orange
2. Posts
   a. Meet AASHTO M 281
   b. Painted or galvanized metal “T” post, 5 ft to 6 ft long

PART 3 EXECUTION

3.1 PREPARATION

~~A.Prepare and submit a Notice of Intent (NOI) for Storm Water Discharges with Construction Activity to the Division of Water Quality at the DEQ along with a signed copy of the NOI to the Engineer. NOI forms can be completed online at Division of Water Quality website. Refer to http://www.udot.utah.gov/index.php/m=c/tid=719.~~

~~B~~A. Do not ~~start~~ begin any earth-disturbing ~~work~~ activity until the ~~completed~~ NOI form has been completed and submitted to the Division of Water Quality ~~at the DEQ~~and the Engineer when disturbing one or more acres.

B. Understand and ~~ensure~~ comply~~iance~~ with the requirements of Utah Storm Water General Permit for Construction Activities.

C. Follow the Storm Water Pollution Prevention Plan (SWPPP) provided in the plan set.

1. Create and submit a plan to the Engineer if a SWPPP is not provided in the plans when any earth-disturbing activities are required.
   a. Address all disturbed areas including, but not limited to, staging areas, haul roads, borrow sites, stockpiles, and disposal areas.
   b. Do not start earth-disturbing activity until the SWPPP is approved and project perimeter temporary erosion measures, and those protecting environmentally sensitive areas, are in place.
      1) Obtain written approval from the Engineer to change the SWPPP.
2. Work directly with the Engineer's designated ECS.
   a. Be available as needed to coordinate the SWPPP, inspect and maintain sediment control devices, and resolve other sediment and erosion control issues.
3. Maintain a copy of the approved SWPPP with the following information on the project site at all times:
   a. SWPPP title sheet
   b. EN series Standard Drawings ~~EN series~~
   c. Erosion and sediment control plan sheets
   d. Project specific details and all contract specifications

~~D. Designate an SWPPP coordinator (or ECS, see Part 4.5 under this Section) who will:~~

~~1. Work directly with the Department SWPPP coordinator ECS designated by the Engineer.~~

~~2. Be available as needed to coordinate the SWPPP, inspect and maintain sediment control devices, and resolve other sediment and erosion control issues.~~

~~E. Do not start earth-disturbing work until project perimeter temporary erosion measures and those protecting environmentally sensitive areas are in place and approved.~~

~~F~~D. Use the most restrictive requirement if a conflict occurs between erosion and sediment control specifications and federal, state, or local agency's laws, rules, or regulations.

~~G. At the end of construction, submit a Notice of Termination (NOT) form to the Division of Water Quality along with a final signed copy to the Engineer to terminate the permit. NOT forms can be obtained from the website listed under A in this subsection.~~

E~~D~~. Install temporary environmental fence, when required, before construction begins.

3.2 INSTALLATION

A. The erosion control measures ~~on~~ in the SWPPP are ~~diagrammatic~~illustrative. ~~and must be adapted~~ Adapt measures in the field to meet their intended purpose and~~.~~ ~~As the project progresses through the various construction phases,~~ implement ~~the~~ appropriate erosion control measures ~~for that stage~~ necessary as the project progresses. Make ~~necessary~~required changes to the SWPPP to accommodate construction sequencing with the approval of the Engineer.

B. ~~Obtain approval from the Engineer to make changes to the SWPPP.~~ The Engineer may direct the installation of additional erosion control measures. Install additional erosion control measures as directed ~~by the Engineer~~.

C. Follow installation procedures outlined in the EN ~~S~~series Standard Drawings.

D. Provide or construct measures such as check dams, silt fence, slope drains, drop~~-in~~ inlet barriers, sediment traps, and other erosion control devices or methods to reduce erosion and sedimentation during construction and/or shutdown periods.

E. Install ~~T~~temporary or permanent stabilization measures (Refer to Sections 02376 and 02911 ~~and Section 02376~~) ~~must be in place~~ as soon as practicable on newly ~~constructed~~disturbed areas, but in no case ~~longer~~ later than 14 days after ~~construction~~disturbance, ~~is completed~~ unless further construction activity precludes installation and will resume ~~on~~ inside that ~~portion of the site~~area within 21 days from when activity ceased. ~~If snow cover precludes the mulch placement, it shall be applied as soon as practicable. Seasonal shut downs require that at a minimum mulch be placed for all disturbed portions of the project.~~

1. Install temporary or permanent stabilization measures prior to seasonal shut down.

F. Install temporary environmental fence in the required locations.
1. Install posts at a 12 ft maximum spacing so the fence does not sag more than 2 inches between posts.
2. Weave the fence over the support posts alternating every two loops and secure it to the posts with wire or plastic ties.

3.3 INSPECTIONS

A. Inspect all denuded areas during construction to determine potential erosion problems. Pro-actively aApply corrective measures in a timely manner as required.

B. Inspect all temporary erosion control measures a minimum of once every seven calendar days and within 24 hours after any storm event greater than ½ inch. Where construction sites have been temporarily or seasonally shut down, conduct inspections once a month.
At theUpon commencementbeginning of earth-movingdisturbing activitiesy, start performing inspections of all temporary erosion control measures, including sediment retention structures, a minimum of once every seven calendar daysper week and within 24 hours after any storm event greater than ½ inch. Conduct inspections a minimum of once per month when construction site activities are temporarily or seasonally shut down.

C. 1. Invite UDOT's ECS appointed by the Engineer to these inspections.
2. After each inspection, complete an inspection report and submit it to the Engineer within 24 hours of the inspection. Include the following information:
a. Names of personnel attending, and date of the inspection.
b. List of problems identified in the previous inspection and note whether or not corrections have been made.
c. List by location, earth-disturbing activities since previous inspection.
d. List by location, erosion and sediment control measures installed since previous inspection.
e. List by location, new and unresolved problems encountered with specific erosion control measures and describe solutions to be implemented.

3.4 MAINTENANCE

A. Maintain temporary sediment control devices to ensure they function properly until all disturbed areas draining to them are stabilized. Refer to Section 01571.

B. Remove and properly dispose of sediment when it has accumulated half way up the overall structure height, or when it interferes with the performance of the structure.

C. Dispose of sediment removed from erosion control structures in a manner acceptable to the Engineer.

3.5 REMOVAL

~~A. All costs associated with Removal are incidental to other items of work and no separate measurement or payment will be made.~~

~~B~~A. After all seeding and mulching has been placed and ~~just before~~within two weeks of ~~final closeout of the~~ project acceptance, remove any remaining sediment from behind and around erosion control features and remove all temporary erosion control features unless directed differently by the Engineer.

~~C. Seed areas where the sediment was removed following Section 02922.~~

B. Remove temporary environmental fence and posts upon completion of construction.

1. Temporary environmental fence and all components becomes property of the Contractor when construction is complete.

1.7~~3.6~~ ~~GENERAL~~ENVIRONMENTAL CONTROL SUPERVISOR (ECS) REQUIREMENTS ~~RESPONSIBILITIES (only~~This article applies only when an ECS is ~~specified and~~ included as a bid item in the ~~contract~~proposal). (NOTE: This article will move to part one in published version. Strikeouts would not transfer properly for draft version.)

A. Qualifications

1. Knowledge of erosion control principles and best management practices for roadway construction sites.
2. Knowledge of the laws related to environmental clearances and how to obtain the clearances required under Section 01355.
3. Ability to understand and implement environmental plans, details, and specifications.
4. ECS certified by the Department.

B. Responsibilities:

1. Implementation of environmental protection commitments and proper installation of mitigation measures associated with the project.

2. Maintain the environmental compliance.
    a. Available 24-hours per day seven days per week to respond as necessary to maintain environmental compliance and to the direction of the Engineer. ~~Be available as needed during seasonal shutdowns.~~
3. Obtain environmental clearances in accordance with Section 01355 for disturbances, waste sites, staging areas, etc. not specifically provided in the contract.
4. Ensure compliance with the requirements of Utah Storm Water General Permit for Construction Activities – Permit No.: UTR100000. Refer to: http://www.udot.utah.gov/index.php/m=c/tid=719
5. Ensure compliance with all requirements of U.S. Army Corps of Engineers Nationwide or Individual Permit or a Utah Division of Water Rights Regional General Permit 40, when applicable.

~~3.7 REGULATORY AGENCY COORDINATION (only applies when an ECS is specified and included as a bid item in the contract).~~

C. Regulatory Agency Coordination
1. Work with the Engineer to maintain coordination and communication between the Contractor, Department, and regulatory agencies. Process all official communication through the Engineer.
2. Coordinate and conduct on-site meetings on an as-needed basis with all regulatory agency inspectors.
3. Notify the Engineer in writing of the results of any agency coordination meeting within 24-hours.

END OF SECTION

Standards Committee Submittal Sheet

Name of preparer: Michael Fazio
Title/Position of preparer: Chief Hydraulic Engineer
Specification/Drawing/Item Title: PIPE, PIPE-ARCH, STRUCTURAL PLATE PIPE, AND STRUCTURAL PIPE ARCH
Specification/Drawing Number: 02610

Enter appropriate priority level:
(See last page for explanation) **3**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page. (http://www.udot.utah.gov/index.php/m=c/tid=303)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

After completing the first revision to the 02610 a pipe supplier requested to revisit some requirements included in the approved specification. A team re-reviewed the specification and made some changes into what became a 02610 Department Special Provision. This special was issued more than a year ago. We requested the users of the specifications and other stakeholders to give their comments on the special before approval into a standard.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

We would like to change how a culvert is defined on the plans, from culvert, class and diameter to storm drain or irrigation or cross culvert, class, and diameter. The engineer would still have the option to specify a particular pipe because of engineering needs.

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

ACEC Comments: (Use as much space as necessary.)

The AGC and ACEC members each received an e-mail notification requesting to provide comments. No comments were received by either member.

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Construction Engineers
Karl Verhaeren
Get rid of 1.4 A. 4 - Corrected
Put 1.4 C with 1.4 A. Put all definitions in one place. Corrected
1.6 A. 1. is redundant Corrected
1.6 A. 3. should only being repairing damage - why automatically say "repair..." looks like you could get rid of this,,, it's covered in 1.6 D. Corrected
Get rid of 2.1 C.
2.2 A. Pipe types are not in Table 4! Corrected
2.4 A. The contractor declares at the preconstruction conference? Gets to choose diameter?! I don't get it. Corrected
2.4 A. How about "Do not use larger than 36-inch diameter"? I am not sure what this comment means.
How much of 3.2 B is in manufacturer's recommendations? Corrected
3.4 B. Not table 3! Corrected
3.5A. Not table 4! Corrected
3.7A. Don't define "poor workmanship". just say cause for rejection. Corrected

Seems like this could be written to be much more concise. Took a quick look at Colorado's pipe and sewer specification...about 3 pages long.

We have reduced the spec's length and would like to reduce it further, later.

Contractors (Any additional contacts beyond "C" above.)

Suppliers
Geneva Pipe - Thank you for your help on improving these specs

Consultants (as required) (Any additional contacts beyond "C" above.)

FHWA (To be accomplished as part of the two-week process before submitting to the Standards and Specifications Section for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)

Email sent on June 6, 2006 to Russell Robertson.

Others (as appropriate)
Mike Miles – R4 Preconstruction Enginer
Part 2.4.A Pipe Selection

This might imply that the pipe type and size is to be determined at the pre-construction meeting when in fact it has been selected a long time ago. Or is the intent to remind everyone at the meeting what pipe they should be using? mm
Corrected
Julia Winfiled
#8 on page 8 first line needs to have Strom changed to STORM
Corrected
Nathan Peterson
Let's get it done.

Dallas Linford
Rob:

The attached Standard Specification requires extensive quality control (inspection & testing) by the contractor. I recommend that a form be included in the Specification that the contractor fills out as he performs the testing and inspections. The inspector could initial the form if appropriate. This form should be developed by the spec writers to insure all required results are obtained. A response to Fazio's email is required by May 26, 2006. Topic for discussion for Your next staff meeting.
We provided an inspection form. Construction can decide who should fill it.

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)
No Change

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.
No additional costs.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

3. Life cycle cost.

N/A

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)
This is an existing special provision for approval.
We improved the language and reduced the amount of clutter in the spec.

H. Safety Impacts?
N/A

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

After completing the first revision to Section 02610 a pipe supplier requested to revisit some requirements included in the approved specification. A team re-reviewed the specification and made some changes into what became a Section 02610 Department Special Provision. This special was issued more than a year ago. We requested the users of the specifications and other stakeholders to give their comments on the special before approval into a standard.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.

Priority 2 Upon posting, this impacts projects being advertised.

Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

Supplemental Specification
2005 Standard Specification Book

SECTION 02610

PIPE, PIPE-ARCH, STRUCTURAL PLATE PIPE, AND STRUCTURAL PIPE ARCH

Delete Section 02610 in its entirety and replace with the following:

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Materials and procedures for installing pipe.

B. Class, type, size, and thickness designations.

C. Asphalt coating for pipe.

1.2 RELATED SECTIONS

~~A. Section 00820: Legal Relations and Responsibility to Public~~

AB. Section 02317: Structural Excavation

B~~C~~. Section 02330: Embankment

C~~D~~. Section 03055: Portland Cement Concrete

D~~E~~. Section 03310: Structural Concrete

1.3 REFERENCES

A. AASHTO M 36: Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains

B. AASHTO M 55: Steel Welded Wire Fabric, Plain, for Concrete Reinforcement

C. AASHTO M 86: Concrete Sewer, Storm Drain, and Culvert Pipe

D. AASHTO M 167: Corrugated Steel Structural Plate, Zinc-Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches

E. AASHTO M 170: Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe

F. AASHTO M 190: Bituminous Coated Corrugated Metal Culvert Pipe and Pipe Arches

G. AASHTO M 196: Corrugated Aluminum Pipe for Sewers and Drains

H. AASHTO M 197: Aluminum Alloy Sheet for Corrugated Aluminum Pipe

I. AASHTO M 198: Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants

J. AASHTO M 207: Reinforced Concrete Elliptical Culvert, Storm Drain and Sewer Pipe

K. AASHTO M 219: Corrugated Aluminum Alloy Structural Plate for Field-Bolted Pipe, Pipe-Arches, and Arches

L. AASHTO M 243: Field Applied Coating of Corrugated Metal Structural Plate for Pipe, Pipe Arches, and Arches

M. AASHTO M 245: Corrugated Steel Pipe, Polymer Precoated, for Sewers and Drains

N. AASHTO M 246: Steel Sheet, Metallic-Coated and Polymer Precoated for Corrugated Steel Pipe

O. AASHTO M 274: Steel Sheet, Aluminum-Coated (Type 2), for Corrugated Steel Pipe

P. AASHTO M 294: Corrugated Polyethylene Pipe, 300- to 1500-mm Diameter

Q. AASHTO M 304: Polyvinyl Chloride (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter

R. AASHTO National Transportation Product Evaluation Program

SR. AASHTO Standard Specifications for Highway Bridges

TS. ASTM A 849: Post-Applied Coatings, Pavings, and Linings for Corrugated Steel Sewer and Drainage Pipe

U~~T~~. ASTM C 828: Standard Test Method for Low Pressure Air Test of Vitrified Clay Pipe Lines

V~~U~~. ASTM C 924: Standard Practice for Testing Concrete Pipe Sewer Lines by Low-Pressure Air Test Method

W~~V~~. ASTM C 969: Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Sewer Lines

X~~W~~. ASTM C 1103: Standard Practice for Joint Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines

Y~~X~~. ASTM D 1784: Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

Z~~Y~~. ASTM D 3212: Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

AA~~Z~~. ASTM D 3350: Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

BB~~AA~~. ASTM F 477: Elastomeric Seals (Gaskets) for Joining Plastic Pipe

CC~~BB~~. ASTM F 1417: Standard Test Method for Testing Installation Acceptance of Plastic Gravity Flow Sewer Lines Using Low Pressure Air

DD~~CC~~. Utah Occupation Safety and Health Regulations

1.4 DEFINITIONS

A. Pipe and Pipe Arch are identified according to diameter or by span and rise, the following definitions, and according to corrosion class~~ as shown in this Section and in Section 2.1:~~ (The following 12 items will be arranged alphabetically after approval.)

1. Cross Culvert – A transverse drain, covered with embankment, which allows surface runoff to pass under the embankment.
2. Storm Drain – A closed conduit or waterway that collects and conveys storm runoff, which has drainage structures at the ends of individual pipe runs such as catch basins, drop inlets, man-holes, endwalls and other similar features by gravity flow.
3. Irrigation Pipe – A pipe designed to carry seasonal irrigation water by gravity flow.
4. Cover – The vertical extent of soil above the crown of the pipe or culvert. ~~(see~~Refer to DG Series Standard Drawings~~series of the standard drawings)~~.

5. End Section – A structure commonly made of steel or concrete, that is attached to one or both ends of a culvert or a pipe to retain the embankment, improve appearance, provide anchorage, improve discharge and limit scour at the opening.
6. Headwall – A structure, commonly made of concrete, placed at the end of culvert inlet or outlet or storm drain outlet, to anchor the pipe, to retain the highway embankment near the pipe end and to protect the pipe ends from bank erosion and channel bed scour.
7. Invert – The floor, bottom, or lowest part of the internal cross section of a culvert, conduit or storm drain.
8. Paved Invert – Lining of concrete, bituminous or other materials, placed in the invert to protect the invert from abrasion and/or to improve the culvert hydraulics.
9. Rise – The vertical height dimension of a box, pipe arch, and arch structure.
10. Skew – The angle between a line perpendicular to the roadway centerline and the longitudinal direction of the culvert barrel.
11. Soffit – The inside top or roof of a culvert, conduit or storm-drain pipe.
12. Span – The horizontal dimension of a box culvert, pipe arch, or arch structure.~~Damage to pipe - Pipe damage is considered any defect that compromises the longevity or functionality of the installation.~~

B. Corrosion Classification:
1. Class A: Pipe used in mostly non-reactive soils, which require no special materials, treatments, or coatings.
2. Class B: Pipe used in moderately reactive and corrosive soils.
3. Class C: Pipe used in soils which are highly reactive and corrosive.
4. Class D: Untreated structural plate pipe used in mostly non-reactive and non-corrosive soils.
5. Class E: Structural plate pipe used in highly reactive and corrosive soils.

~~C. Other useful definitions:~~
~~1. Cover – The vertical extent of soil above the crown of the pipe or culvert (see DG series of the standard drawings).~~
~~2. End Section – A structure commonly made of steel or concrete, that is attached to one or both ends of a culvert or a pipe to retain the embankment, improve appearance, provide anchorage, improve discharge and limit scour at the opening.~~
~~3. Headwall – A structure, commonly made of concrete, placed at the end of culvert inlet or outlet or storm drain outlet, to anchor the pipe, to retain the highway embankment near the pipe end and to protect the pipe ends from bank erosion and channel bed scour.~~

~~4. Invert – The floor, bottom, or lowest part of the internal cross section of a culvert, conduit or storm drain.~~
~~5. Paved Invert – Lining of concrete, bituminous or other materials, placed in the invert to protect the invert from abrasion and/or to improve the culvert hydraulics.~~
~~6. Rise – The vertical height dimension of a box, pipe arch, and arch structure.~~
~~7. Skew – The angle between a line perpendicular to the roadway centerline and the longitudinal direction of the culvert barrel.~~
~~8. Soffit – The inside top or roof of a culvert, conduit or storm drain pipe.~~
~~9. Span – The horizontal dimension of a box culvert, pipe arch, or arch structure.~~

1.5 SUBMITTALS

A. Provide a manufacturer's Certificate of Compliance showing that furnished pipes meet or exceed the requirements in Article 2.4~~5~~ paragraph A.1 of this section.

B. Provide certification that the company manufacturing HDPE pipe is enrolled in the National Transportation Product Evaluation Program (NTPEP) and that the particular pipe size they are furnishing has been tested and meets AASHTO minimum requirements for HDPE pipe.

C. Furnish a Certification of Compliance from the manufacturer certifying coating thickness.

1.6 ACCEPTANCE CRITERIA

A. General
1. Pipes are accepted according to the criteria outlined in this section. Perform the acceptance testing, or use the services of a UDOT approved third party testing company.
2. Pipes are accepted after verification that the following elements meet the specification's requirements:
   a. Horizontal and vertical alignment deviations
   b. Barrel distortion
   c. Damage to the pipe
   d. Joints
   e. Coating integrity
~~3. Repair according to manufacturer recommendations as approved by the Engineer. Repair any pipes with damage that compromises the longevity or functionality of the installation. Remove and replace any pipe that can not be repaired to reasonably meet the design criteria and function.~~

B. Requirements

1. Horizontal and vertical alignment deviations
2. Remove and reinstall all pipes that exceed the alignment tolerances shown in Table 1.

Table 1 - Tolerances

Installation Alignment Tolerances		
Design Grade	**Horizontal Deviation**	**Vertical Deviation ***
		inches/100feet
> 1 %	Horizontal joint deflections not to exceed industry standards	1 1/2
≤ 1 %		1
< 0.5 %		± 0.5

* For cross culverts increase tolerance by 50 percent.

3. Joints
   a. Cross Culverts - Provide pipes with joints that pass a 3-psi pressure test in the laboratory according to Article 2.4~~5~~ paragraph A of this section.
   b. Storm Drains – Provide pipes with joints that pass a 5-psi pressure test or any other pressure requirements specified in the plans. Test pipes according to Article 2.4~~5~~ paragraph A of this section.
   c. Irrigation pipe – Provide pipes with joints that pass laboratory tests for 5 psi or any other pressure requirements specified in the plans.
   d. Pipe arches and structural plate pipes are installed per manufacturer's recommendations and are not pressure rated.
4. Allowable distortions – Provide installed pipes that do not have ovaling or distortions greater then 5 percent of the nominal pipe diameter. Measure distortions using a mandrel or directly. For nominal pipe diameter larger than 48 inches, use measured diameter to calculate the 5 percent tolerance limit.

C. Inspection and testing

1. The inspection and testing is divided into two categories:
   a. Cross Culverts
   b. Storm drains and irrigation pipes.
2. Table 2 shows the inspection and testing required according to pipe category. Inspect and/or test with the Engineer or his representative present, the cross culverts, storm drains, and irrigation pipes installation prior to placing the roadway pavement.

Table 2 - Pipe Testing Requirements According to Pipe Function.

Pipe Category and Size	Visual		Physical		Leakage
	Sight	Video Recording	Manual Measure	Mandrel See Article~~Sec.~~ 1.6.C6	Air or Water Test
Cross Culverts ≤ 48-inch dia.		X*	X*	When visual shows non compliance with criteria in this section	
Cross Culverts > 48-inch dia.	X		X		
Storm Drains/Irrigation Pipes ≤ 48-inch dia.		X*	X*	When visual shows non compliance with criteria in this section	When visual test shows non compliance with criteria in this section
Storm Drains/Irrigation Pipe > 48-inch dia.	X		X		When visual test shows non compliance with criteria in this section

* Both methods are acceptable for pipes with diameters larger than 30-inches

3. Inspect 25 percent of all the cross culvert, storm drain installations, and irrigation pipe units, selected by the Engineer. Round to the highest whole unit. Test any pipes with apparent defects as directed by the engineer. The Department will pay the cost of any requested additional tests that show the pipe tested being in compliance with the criteria in this section.
4. Sample Unit
   a. The unit for pipes used for cross-culverts is the entire length of the cross culvert
   b. The unit for pipes used for closed conduits, such as storm-drains and irrigation pipes is the entire length of pipe between manholes or other junction structures.
5. Visual Inspection
   a. Visually inspect pipes as required in Table 2, with an Engineer's representative. Follow OSHA requirements for inspecting confined entry spaces.
   b. Provide and use a mobile color video camera with an appropriate light to show the interior of the pipe that is able to move inside the pipe barrel and be controlled remotely by the inspector, to inspect installed pipes as required in Table 2.

c. Provide a remote monitor and a recording apparatus for the camera, to view and record the condition of the installed pipes.

d. Provide a digital copy of the pipe inspection video recording to the Engineer.

6. Mandrel Test

When visual inspection documents pipe deformation of concern, the Engineer can require a mandrel test according to the following criteria.

a. Test pipe by hand pulling a fabricated mandrel through the sample unit.

b. Provide and use mandrels to verify that the installed pipes meet the specification requirements in Table 2 of this specification.

c. Provide the following:

1) A mandrel, acceptable to the Engineer.

2) A mandrel with an effective diameter equal to 95 percent of the nominal inside diameter.

3) A proving-ring to verify mandrel size.

4) A mandrel with a minimum of nine equally spaced runners (40 degree angles).

7. Manual Measurement

a. Measure manually any distortions (deflections) of pipes as indicated in Table 2 and verify in the presence of the Engineer or his representative that the installed pipes sample meet the criteria in Table 2.

8. Joint Test (for Storm Drains and Irrigation Pipes only)

In addition to the inspection requirements in Article 1.6 paragraph C of this section, test units with diameters equal to or less than 42 inches when visual inspection indicates noncompliance with the criteria in this section. Test all pipes that have joints showing visible gaps, defects, or any other problem according to one the following testing methods:

a. Air Test

Test individual joints according to ASTM C 1103.
Concrete Pipe – Test according ASTM C 924.
Plastic Pipe – Test according to ASTM C 828 or C 924 or F 1417 and manufacturer's recommendations.

b. Exfiltration Test

Test all pipe material types according to AASHTO M 86 and ASTM C 969. Maintain head for one hour. Do not exceed leakage values in Table 3. Locate source or sources of leakage and repair damaged storm drain or irrigation system that does not pass the test.

Table 3 - Leakage Test Allowances

Nominal Pipe Diameter (Inches)	Maximum Leakage Allowed (Gal/hr/100 feet)
18	4.5
24	6
30	7.5
36	9
42	10.5
48	12

D. Quality Assurance

1. Repair or replace damaged or improperly installed pipes in a sample unit at the direction of the Engineer.
2. Repair according to manufacturer's recommendations pipes that fail the Joint Test in Article 1.6 paragraph C at no cost to the Department. Retest the repaired pipes. Remove and replace pipes if they fail retest.
3. Provide engineering analysis certifying the structural and hydraulic integrity of the pipe, stamped by a professional engineer registered in Utah, for all pipes that fail the mandrel test and that do not exceed 10-percent deflections, to the Resident Engineer and Central Hydraulics for the pipe acceptance.
4. Apply the pay reduction schedule in Table 4, for sample units left in place that have pipes that do not meet mandrel test requirements, if an engineering analysis is not performed:

Table 4 - Payment Reductions

PIPE DEFLECTION MEASURED	
Amount of Deflection (%)	Payment
0.0 to 5	100% of the Unit Bid Price
5.1 to 9.9	75% of the Unit Bid Price
10 or greater	Remove and Replace

5. Remove and replace all pipes that exceed 10-percent deflections.

PART 2 PRODUCTS

~~2.1 PIPE CORROSION CLASSIFICATION~~

~~A. Pipe Corrosion Classes:~~

~~1. Class A: Pipe used in mostly non-reactive soils that require no special materials, treatment, or coating.~~

~~2. Class B: Pipe used in moderately reactive and corrosive soils.~~

~~3. Class C: Pipe used in soils which are highly reactive and corrosive.~~

~~4. Class D: Untreated structural plate pipe used in mostly non-reactive and non-corrosive soils.~~

~~5. Class E: Structural plate pipe used in highly reactive and corrosive soils.~~

~~B. Pipe Class Substitutions: May be made at no additional cost to the Department.~~

~~1. Class B and C may be substituted for Class A.~~

~~2. Class C may be substituted for Class B or A.~~

~~3. Class E may be substituted for Class D.~~

~~C. Refer to Table 5.~~

2.21 PIPE TYPES

A. Pipe, Pipe Arch, Structural Plate Pipe and Structural Plate Pipe Arch Types: Refer to Table 45.

Table 5 - AASHTO Reference Specifications for Pipe

Pipe Type		Pipe Class				
		A	B	C	D	E
Substitutions: Class B and C may be substituted for Class A, Class C may be substituted for Class B or A, Class E may be substituted for Class D.						
1.0	**Corrugated Pipe and Pipe Arch:**					
1.1	Corrugated steel pipe.	M 36	M 36 Asphalt Coating (Type A) M 190 OR Polymeric Coating 0 µm (inside) / 250 µm (outside) M 245 & M 246 ASTM A 849 or Aluminized Type II Steel M 274 (2)	M 36 Asphalt Coating (Type A) M 190 OR Polymeric Coating 250 µm (inside)/250 m (outside) M 245 & M 246 ASTM A 849	N/A	N/A
1.1(a)	Corrugated steel pipe arch. **(1)**					

Pipe Type		Pipe Class				
		A	B	C	D	E
Substitutions: Class B and C may be substituted for Class A, Class C may be substituted for Class B or A, Class E may be substituted for Class D.						
1.2 1.2 (a)	Corrugated aluminum pipe. Corrugated aluminum pipe arch. **(1)**	M 196 M 197	M 196 M 197	M 196 M 197	N/A	N/A
1.3	Corrugated polyethylene (HDPE) pipe	M 294 ASTM D 3350	M 294 ASTM D 3350	M 294 ASTM D 3350	N/A	N/A
2.0	**Smooth-Lined Pipe and Pipe Arch:**					
2.1	Concrete lined corrugated steel pipe (Use Type V cement. Refer to Section 03055)	M 36	M 36 Asphalt Coating (Type A) M 190 OR Polymeric Coating 250 µm (inside) /250 µm (outside) M 245 & M 246 ASTM A 849	M 36 Asphalt Coating (Type A) M 190 OR Polymeric Coating 250 µm (inside) /250 µm (outside) M 245 & M 246 ASTM A 849	N/A	N/A
2.2	Corrugated Polyethylene Pipe, 300- to 1500-mm Diameter	M 294 ASTM D3350	M 294 ASTM D3350	M 294 ASTM D3350	N/A	N/A
2.3	Smooth lined Polyvinyl chloride (PVC) pipe	M 304 Cell Class # 12454C ASTM D 1784	M 304 Cell Class # 12454C ASTM D 1784	M 304 Cell Class # 12454C ASTM D 1784	N/A	N/A
2.4 2.4 A	Asphalt smooth lined corrugated steel pipe Pipe arch	M 36	M 36 Asphalt Coating (Type D) M 190	M 36 Asphalt Coating (Type D) M 190	N/A	N/A
2.5 2.5 a	Spiral rib steel pipe Spiral rib steel pipe arch	M 36	M 36 Asphalt Coating (Type A) M 190 OR Polymeric Coating 0µm (inside) / 250 µm (outside) M 245 and M 246, ASTM A 849 or Aluminized Type II Steel M 274 (2)	M 36 Asphalt Coating (Type A) M 190 OR Polymeric Coating 250 µm (inside)/250 µm (outside) M 245 and M 246 ASTM A 849	N/A	N/A
2.6	Spiral rib aluminum pipe and pipe arch	M 196 and M 197	M 196 and M 197	M 196 and M 197	N/A	N/A
2.7	Reinforced concrete pipe	M 170 Type II Cement	M 170 Type II Cement	M 170 Type V Cement required	N/A	N/A

Pipe Type		Pipe Class				
		A	B	C	D	E
Substitutions: Class B and C may be substituted for Class A, Class C may be substituted for Class B or A, Class E may be substituted for Class D.						
2.8	Non-reinforced concrete pipe	M 86 Type II Cement	M 86 Type II Cement	M 86 Type V Cement required	N/A	N/A
2.9	Elliptical reinforced concrete pipe	M 207 Type II Cement	M 207 Type II Cement	M 207 Type V Cement required	N/A	N/A
3.0	**Structural Plate Pipe and Pipe Arch:**					
3.1	Structural steel plate pipe and pipe arch	N/A	N/A	N/A	M 167	M 167 M 243
3.2	Aluminum alloy structural plate pipe and pipe arch	N/A	N/A	N/A	M 219	M 219
Footnotes: (1) Minimum corner radii conforming to the details shown on the standard drawings. (2) Acceptable Soil Conditions, Class B, Aluminized Type II Steel are: 1.6mm minimum thickness of metal acceptable where pH is greater than 7 and less than 8.5, and soil resistivity is greater than 1500 ohm-centimeters.						

2.32 RELATED PRODUCTS

A. Asphalt Coating: Furnish Material Class M-Mastic, either asphalt or tar base, cold applied. Refer to AASHTO M 243 and ASTM A 849.

~~1. Asphalt base mastic design criteria:~~

~~a. Functions as a cool-applied waterproofing membrane.~~

~~b. Provides a protective coating to aluminum or steel highly resistant to corrosion and chemical fumes.~~

~~c. Is not affected by freezing temperatures and does not flow in hot weather.~~

~~d. Has high cohesive strength and readily hardens in to a tough elastic seal after application.~~

~~e. Is mixed until the mineral stabilizers and fillers are uniformly dispersed.~~ ~~AASHTO M 243.~~

2.43 PIPE SELECTION

~~A~~. ~~At the preconstruction conference, declare choice of pipe, type, diameter and thickness to be used.~~

A~~B~~. Use the same type and strength ~~of concrete pipe~~ or thickness ~~of steel, aluminum, polyethylene or polyvinyl chloride (PVC) pipe~~ for the entire run of pipe.

B~~C~~. Use the maximum height of cover to determine the strength or thickness. Refer to the DG series Standard Drawings.

C~~D~~. Do not use aluminum pipe when a paved invert is required, unless protective measures are taken. Follow this Article 3.7 paragraph C of this section.

D~~E~~. Corrugated and smooth-lined high density polyethylene pipes: Use only HDPE Plastic Pipe up to 60-inch diameter that is certified by AASHTO National Transportation Product Evaluation Program (NTPEP)~~currently~~ to meet~~s~~ AASHTO M 294 requirements and ~~is certified by AASHTO National Transportation Product Evaluation Program (NTPEP)~~. Provide a copy of NTPEP ~~test results~~certification to the Engineer.

E~~F~~. Corrugated and smooth-lined PVC pipes: Use up to 36inch diameter.

F~~G~~. Furnish Material Pipe Coating Class M-Mastic, either asphalt or tar base, cold applied. Refer to ASTM A 849.

G~~H~~. Precast, non-reinforced concrete pipe: Use only 18-inch to 36-inch diameter.

H~~I~~. Do not allow pipes of different types of metal to contact each other. Use matching materials to make direct extensions of existing pipes.

I~~J~~. Do not use pipe containing longitudinal lap seams if watertight pipe or watertight joints are called for.

J~~K~~. Do not use thermoplastic pipe manufactured without UV inhibitors approved by the Materials Engineer in applications subject to direct sunlight.

2.~~4~~5 JOINTS OR COUPLING BANDS FOR PIPES

A. General:
   1. Furnish pipes with joints that can sustain 3 psi minimum pressure for all cross culverts, or 5 psi minimum pressure for all storm-drains and irrigation pipes, tested according to the proper AASHTO and ASTM test requirements by and independent lab or witnessed by a UDOT representative, for each pipe type.
   2. Comply with manufacturer's recommendations for connecting pipes and for connecting pipes to concrete headwalls, catch basins, and similar structures.

B. Concrete Pipes:
   1. Meet AASHTO M 198.

C. Metal Pipe:
   ~~1~~. ~~Refer to DG series Standard Drawings.~~

12. Conform to AASHTO Standard Specifications for Highway Bridges and AASHTO M 36 or AASHTO M 245 with the following modifications:
    a. Use connecting bands of the same class as the pipe. Maintain a minimum thickness of 0.064 inch for the connecting bands.
    b. Use bands with projections (dimple bands) only in extension of existing pipes where annular corrugations do not exist.
    c. The ends of helically corrugated pipe must be re-rolled to form at least two full annular corrugations each before being joined.
    d. Use flat bands only when approved in writing by the Engineer.
    e. Follow DG series Standard Drawings.

D. Joints for Polyethylene (HDPE) Pipe: Unless otherwise specified, use standard joints conforming to Section 7, Requirements, and Section 9, Test Methods of AASHTO M 294 and tested Test joints in the lab in accordance with ASTM D 3212.

E. Joints for PVC Pipes: Show no leakage when tested in accordance with ASTM D 3212. Meet ASTM F 477 for gaskets.

F. Provide HDPE joints that can sustain in the lab 5 psi minimum pressure for all cross culverts and 10 psi for all drainage and irrigation pipe and sewer pipes.

PART 3 EXECUTION

3.1 PREPARATION

A. Excavating, Trenching, Bedding and Backfill:
    1. Refer to Section 02317.
    2. Refer to DG series Standard Drawings.
    3. Comply with Utah Occupation Safety and Health regulations when excavating and trenching. Note safety restrictions for trenches deeper than 4 feet. Follow Section 00820.
    4. Use Type I bedding unless Type II or Type III is required due to foundation conditions.

3.2 INSTALLATION

A. Follow manufacturer installation requirements for installing all types of pipe.

B. Follow the following installation guidelines. Consult with the Resident Engineer when conflicts arise with the following and manufacture's guidelines.
    1. Lay pipe starting at the downstream end.

2. Keep the bottom of the pipe in contact with the bedding throughout its length.
3. When indicated on the drawings, camber pipe upward from a chord through the inlet and outlet inverts an ordinate amount equal to one percent of the pipe length. Develop camber on a parabolic curve. If the mid-point elevation on the parabolic curve as designed exceeds the elevation of the inlet invert, reduce the amount of camber or increase the pipe gradient.
4. Place bell or socket end of pipe facing upstream.
5. Place pipes fabricated with longitudinal laps or seams so that such seams are located approximately 45 degrees away from the invert or crown.
6. Place paved invert or partially lined pipe so that the centerline of the paved segment matches the flow line.
7. Place elliptical pipe with the major axis within five degrees of a vertical plane through the longitudinal axis of the pipe.
8. Place outside circumferential laps of flexible corrugated (annular corrugations) pipe facing upstream.
9. Close the joints to meet the specified joint integrity in accordance with manufacturer's recommendations.

B10. Install pipe to conform to AASHTO Standard Specifications for Highway Bridges:.

a. Section 26 for Corrugated Metal Pipe
b. Section 27 for Concrete Pipe
c. Section 30 for Thermoplastic Pipe

3.3 SMOOTH LINING FOR CORRUGATED STEEL PIPE AND PIPE ARCH

A. Clean all surfaces to be lined including removal of all oil and grease from the metal. Allow the surface to dry before proceeding.

B. Concrete Lining: Follow ASTM A 849, Subsections 5 and 9.

C. Asphalt Lining: Follow Table 3no asphalt coating.

3.4 PIPE AND PIPE ARCH

A. Follow AASHTO M 243.

B. Use materials described in Table 35.

C. Remove moisture, dirt, oil, un-bonded or incompatible paint, grease residual oil, alkalies, or other foreign matter from the surface to be coated.

D. Spray or brush-coat all aluminum pipes contacting concrete with an asphalt mastic or tar base material to a minimum thickness of 0.05-inch.

3.5 STRUCTURAL PLATE PIPE AND PLATE PIPE ARCH

A. Use materials described in Table 45.

B. Repair or replace all damaged plates or coatings before installation.

C. Installation: Follow DG series Standard Drawings. Embankment: Refer to Section 02330.

D. Assembly:
1. Give the Engineer a copy of the detail plan showing the position of each plate and the assembly order.
2. Follow the manufacturer's instructions.
3. Clearly mark each modified plate, designating its position in the finished structure.
4. Place outside circumferential pipe-laps facing upstream.
5. Attain approved seam fit-up. All bolts must be in place and have a torque according to manufacturer's recommendation.
6. Form structural plates so that the finished pipe is elliptical with the vertical diameter of round pipe approximately 5 percent greater than the nominal diameter.

E. No Asphalt Coating allowed(~~structural plate pipe, and plate pipe arch, and arches):~~

~~1. Thoroughly clean all plates to be coated. Remove any oil or grease from the surface of the plates. Keep plates clean and dry prior to coating.~~

~~2. Apply coating to dry plates:~~

~~a. Spray or brush-coat the entire exterior surface of the pipes with an approved post-applied mastic coating to a minimum 0.08 inches wet thickness. Follow AASHTO M 243.~~

~~b. Spray or brush-coat the inside invert for 1/4 of the circumference of round pipe and the full span width of pipe arch with the same compound.~~

~~c. Spray or brush coat all metal surfaces in contact with the ground at the time of erection before assembly. The remaining surfaces may be treated after erection.~~

~~3. Apply uniformly to a minimum thickness of 0.06 inches dry thickness to structural plate for pipe, pipe arches, or arches on inside and outside surfaces measured on the crest of the corrugations.~~

~~4. Furnish as follows, according to the application used:~~

~~a. Spraying consistency: Spray with an air gun without the use of additional thinners when temperatures are 39 degrees F and above.~~

~~b. Troweling consistency: Apply with a knife or trowel.~~
~~c. Brushing consistency: Apply with an ordinary roofing brush.~~

3.6 INVERT PROTECTION

A. Paved Invert:
1. Use corrugated steel pipe or pipe arch and structural steel plate pipe or plate pipe arch.
2. Complete backfill and embankment over the pipe before placing paved invert material.
3. Use 10-gage wire fabric with wire spaced at 6-inch centers. Refer to AASHTO M 55.
4. Arc-weld the wire mesh reinforcement to the corrugation at not more than 2 ft centers.
5. Place concrete at least 2 inches above the crest of the corrugations, at least 1/4 of the circumference of round pipe, or the span width of arch pipe. Refer to Section 03055.
6. Finish the concrete to a floated surface finish. ~~Follow~~ Refer to Section 03310.
7. After curing, coat the joint between the pipe and concrete with liquid asphalt at a rate 0.9 gal/yd^2 of residual asphalt. Coat 6 inches above and below the joints.

3.7 QUALITY CONTROL

A. Provide adequate cover or protection for all pipe during project construction. Replace all damaged pipe before acceptance by the Department.

B. The following ~~constitute poor workmanship and any one is~~are some cause~~-~~s for rejection:
1. Irregular or distorted shape (not as provided or designed)
2. Dents or bends
3. Damaged, broken, delaminated or scaled coating
4. Loose bolts or nuts
5. Uneven laps
6. Improper fitting joints
7. Any damage which compromises the functionality and design life of the pipe.

C. Coatings:

1. Department will take a representative sample from each lot furnished to conduct verification testing.

END OF SECTION

Standards Committee Submittal Sheet

Name of preparer: **Boyd Wheeler / Ray Cook**
Title/Position of preparer: **Deputy Bridge Engineer for Design / Senior Design Engineer**
Specification/Drawing/Item Title: **Precast Concrete Box and Three-Sided Structures for Culverts**
Specification/Drawing Number: **02645**

Enter appropriate priority level:
(See last page for explanation) **3**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page. (http://www.udot.utah.gov/index.php/m=c/tid=303)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

These changes update some aspects of the specification and add provisions for the use of precast concrete three-sided culvert structures such as CONSPAN on UDOT projects.

Industry requested that the existing specification be updated to include the precast three-sided culvert structures. The updated specification was generated in partnership with industry representatives.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

Will need to add item for Precast Concrete Three-Sided Culvert Structures. In the past, this structure type has been bid as a lump sum item with an estimated length shown on the plans.

C. Stakeholder Notification for AGC and ACEC:

By email provide the AGC and ACEC Standards Committee member a copy of all pertinent information relating to the specification or drawing. Detail all responses below. Indicate if no comments were received.

Note: There is a two-week response time set for this item.

Refer to the Standards Committee Web site, Members page at http://www.udot.utah.gov/index.php/m=c/tid=659 for the respective e-mail addresses.

AGC Comments: (Use as much space as necessary.)

None received. Item was coordinated over a several month span.

ACEC Comments: (Use as much space as necessary.)

See attached. Item was coordinated over a several month span.

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Note: There is a two-week response time set for this item. Allow Stakeholders two weeks to process and respond to coordination requests. All areas should try to complete review and comment as soon as possible but within two weeks.

In-house (for example, preconstruction, materials, construction, safety, design, maintenance) (Include all applicable in-house areas even if not listed above.)

Construction Engineers

Sent to all Region Preconstruction and Construction Engineers. See attached for comments.

Troy Petersen, when part of Materials, coordinated on and assisted with the writing of this change. No coordination with Maintenance prior to submission.

Contractors (Any additional contacts beyond “C” above.)

Suppliers

Generated in partnership with Randy Wahlen, Mountain States Concrete Pipe Association and Jerry Rasmussen, AMCOR Precast.

Consultants (as required) (Any additional contacts beyond “C” above.)

FHWA (To be accomplished as part of the two-week process before submitting to the Standards and Specifications Section for inclusion on the Standards Committee agenda.) (This is in addition to the requirements of UDOT Policy 08A5-1, procedure 08A5-1.3.)

While finalizing the specification, Ray Cook became aware that FHWA should have been included in the two week review period before submittal. There was not sufficient time to complete the requirement prior to adding the item to the agenda. Email request sent June 12, 2006 to Russell Robertson, following coordination with the Standards Section.

Others (as appropriate)

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

No changes required. Precast concrete structures are already adequately covered.

F. Costs? (Estimates are acceptable.)

1. Additional costs to average bid item price.

   This change adds a new structure type that provides an additional option to designers and contractors. Any cost increase in the use of the new structure type will be accounted for when selecting the structure type and in the original estimate. Structure type selection will be based upon project needs.

   Note: The supplier completes the structural design of this structure type during the construction phase, therefore construction costs may increase while design costs should decrease.

2. Operational (For example, maintenance, materials, equipment, labor, administrative, programming).

   None expected.

3. Life cycle cost.

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

Benefits to using this structure type include reduced construction times (installation) and thus a reduction in traffic impacts.

H. Safety Impacts?

None.

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

Issues related to the use of this structure type will be addressed during the design phase. This may include the use of cast-in-place headwalls, wingwalls, floor, and appropriate scour mitigation measures.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.

Priority 2 Upon posting, this impacts projects being advertised.

Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

UDOT STRUCTURES DIVISION
COMMENT AND RESOLUTION SHEET

CODES:
A. ACCEPT COMMENT—WILL BE CORRECTED, ADDED, OR CLARIFIED.
B. DESIGNER WILL EVALUATE.
C. DELETE COMMENT
D. DEPARTMENT TO EVALUATE.

DOCUMENT CONTROL NUMBER: N/A	REVIEW TYPE: SPECIFICATION	REVIEWER(S): VARIOUS	DATE: 6/09/06
DESCRIPTION: PROPOSED SUPPLEMENTAL SPECIFICATION 02645: PRECAST CONCRETE BOX AND THREE-SIDED STRUCTURES FOR CULVERTS	DESIGNER: BOYD WHEELER / RAY COOK	DISCIPLINE: STRUCTURES	CRM: N/A

ITEM NO.	SECTION (1)	COMMENTS	CODE(2)	RESPONSE(2)	FINAL DISPOSITION(3)
COMMENTS BY ACEC MEMBERS C/O TYLER YORGASEN					
1	G	Why are the 4-sided boxes designed differently than 3-sided boxes? The different live loads don't really make much sense to me.	C	The 3-sided structures are not really boxes. They are precast concrete arches with footings and without a structural bottom floor. Therefore, these two structure types have different structural design criteria. In addition, ASTM C1433 includes complete design and construction details (member sizes and thicknesses, reinforcing steel sizes and spacing, etc.) for standard precast box sections. The design of these elements is based upon AASHTO HS-20 live loading. We have chosen to accept these designs on current projects. ASTM C1504 includes design criteria for 3-sided structures instead of complete designs. UDOT Structures requires that all new structure designs comply with the AASHTO *LRFD Bridge Design Specifications,* which uses HL-93 live loading. We have chosen to require this on box culverts and 3-sided structures that require structure-specific special designs.	

(1) Indicate drawing no./page no. or use "G" for general comment.
(2) To be filled out by Designer.
(3) To be determined in subsequent comment resolution meeting/discussion (list date).

Note: The intended use of this form is to provide a means for the Department to comment on submitted structural design plans and calculations. All comments must be satisfactorily resolved and incorporated into the contract documents before the design can be approved.

UDOT STRUCTURES DIVISION
COMMENT AND RESOLUTION SHEET

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ITEM NO.	SECTION (1)	COMMENTS	CODE(2)	RESPONSE(2)	FINAL DISPOSITION(3)
2	3.1 A.3 3.1 B.2	It calls for minimum circumference reinforcing in a box or a three-sided box. Since these culverts are square or rectangular perimeter reinforcing might be a better description.	C	ASTM C1433 and C1504 specifications both refer to "circumferential reinforcement." This is also the terminology used in UDOT's current specification for precast concrete box culverts. For consistency, we prefer to leave it as is.	
3	3.3 B	(Second Sentence): Replace " . . . the area will be excavated. . ." with " . . . excavate . . ."	A	Will change.	
4	3.4 M	Delete "Home joints to maximum gap of 1 inch"; it is discussed clearly in 3.6 JOINTS.	A	Will delete in 3.4 M.	
AGC COMMENTS					
		None received.			

(1) Indicate drawing no./page no. or use "G" for general comment.
(2) To be filled out by Designer.
(3) To be determined in subsequent comment resolution meeting/discussion (list date).

Note: The intended use of this form is to provide a means for the Department to comment on submitted structural design plans and calculations. All comments must be satisfactorily resolved and incorporated into the contract documents before the design can be approved.

UDOT STRUCTURES DIVISION
COMMENT AND RESOLUTION SHEET

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B. DESIGNER WILL EVALUATE.
C. DELETE COMMENT
D. DEPARTMENT TO EVALUATE.

DOCUMENT CONTROL NUMBER: N/A	REVIEW TYPE: SPECIFICATION	REVIEWER(S): VARIOUS	DATE: 6/09/06
DESCRIPTION: PROPOSED SUPPLEMENTAL SPECIFICATION 02645: PRECAST CONCRETE BOX AND THREE-SIDED STRUCTURES FOR CULVERTS	DESIGNER: BOYD WHEELER / RAY COOK	DISCIPLINE: STRUCTURES	CRM: N/A

ITEM NO.	SECTION (1)	COMMENTS	CODE(2)	RESPONSE(2)	FINAL DISPOSITION(3)
COMMENT FROM ROB WIGHT, REGION 2 CONSTRUCTION ENGINEER					
1	G	I would include a note in either the bedding and backfill section or the installation section about installing the scour protection according to the plans.	C	Precast box culverts do not typically have scour mitigation measures beyond the apron and cutoff wall at each end. Three-sided structures may not have scour mitigation measures if a cast-in-place floor and cutoff wall is provided. For those structures that do have scour mitigation measures, these measures are not considered part of the work covered by this specification and are not covered by this specification. It makes more sense to me to cover this elsewhere.	
COMMENTS FROM TIM ROSE, REGION 2 PRECONSTRUCTION ENGINEER					
1	1.1	What is “conventionally-reinforced concrete”?	C	Conventionally reinforced concrete is concrete reinforced with mild reinforcing steel as opposed to post-tensioned concrete. This terminology is used in ASTM C 1504.	
2	1.3 E	Revise to read “UDOT Quality Management Plan: Pre-cast / Prestressed Concrete Structure.”	A	Will update so that 1.3 E and 2.5 A agree.	Does not meet Standards guidance. Barry Axelrod

(1) Indicate drawing no./page no. or use “G” for general comment.
(2) To be filled out by Designer.
(3) To be determined in subsequent comment resolution meeting/discussion (list date).

Note: The intended use of this form is to provide a means for the Department to comment on submitted structural design plans and calculations. All comments must be satisfactorily resolved and incorporated into the contract documents before the design can be approved.

UDOT STRUCTURES DIVISION
COMMENT AND RESOLUTION SHEET

CODES:
A. ACCEPT COMMENT—WILL BE CORRECTED, ADDED, OR CLARIFIED.
B. DESIGNER WILL EVALUATE.
C. DELETE COMMENT
D. DEPARTMENT TO EVALUATE.

DOCUMENT CONTROL NUMBER: N/A	REVIEW TYPE: SPECIFICATION	REVIEWER(S): VARIOUS	DATE: 6/09/06
DESCRIPTION: PROPOSED SUPPLEMENTAL SPECIFICATION 02645: PRECAST CONCRETE BOX AND THREE-SIDED STRUCTURES FOR CULVERTS	DESIGNER: BOYD WHEELER / RAY COOK	DISCIPLINE: STRUCTURES	CRM: N/A

ITEM NO.	SECTION (1)	COMMENTS	CODE(2)	RESPONSE(2)	FINAL DISPOSITION(3)
3	1.3 F	When did we start putting OSHA requirements in our specifications? Delete 1.3 F.	A	Will delete.	
4	2.4	Quality Assurance should be labeled Section 2.5.	A	Will correct.	
5	2.5 B	Don't we need a unique identification number in order to track the pre-cast items in the Materials Data Base?	C	Discussed with Troy Peterson. He said the inspectors only need the casting date and the supplier identification. (I'm open to whatever is needed.)	
6	3.2 A.2	See Item #3, delete 3.2 A.2.	A	Will delete.	
7	3.3 A	Clarify verbiage that the box needs to be bedded in a minimum of 4" of granular backfill borrow. I don't think it is very clear as written.	A	Clarified.	
8	3.4	Many of the items listed under Section 3.4 seem unnecessary.	C	Although several of these items may seem unnecessary, they were generated by suppliers who felt that they are necessary to obtain a properly constructed structure. We prefer to leave them as they are.	
9	3.4 I	What is undue resistance? When do you know when you have met undue resistance?	A	Clarified.	
10	3.4 M	Typo, "Home" probably should be Hone???	C	"Home" is correct.	

(1) Indicate drawing no./page no. or use "G" for general comment.
(2) To be filled out by Designer.
(3) To be determined in subsequent comment resolution meeting/discussion (list date).

Note: The intended use of this form is to provide a means for the Department to comment on submitted structural design plans and calculations. All comments must be satisfactorily resolved and incorporated into the contract documents before the design can be approved.

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DOCUMENT CONTROL NUMBER: N/A	**REVIEW TYPE: SPECIFICATION**	**REVIEWER(S): VARIOUS**	**DATE: 6/09/06**
DESCRIPTION: PROPOSED SUPPLEMENTAL SPECIFICATION 02645: PRECAST CONCRETE BOX AND THREE-SIDED STRUCTURES FOR CULVERTS	**DESIGNER: BOYD WHEELER / RAY COOK**	**DISCIPLINE: STRUCTURES**	**CRM: N/A**

ITEM NO.	SECTION (1)	COMMENTS	CODE(2)	RESPONSE(2)	FINAL DISPOSITION(3)
11	3.7 C	How about using “Finish flush with all concrete surfaces.”	A	Will change.	

(1) Indicate drawing no./page no. or use “G” for general comment.
(2) To be filled out by Designer.
(3) To be determined in subsequent comment resolution meeting/discussion (list date).

Note: The intended use of this form is to provide a means for the Department to comment on submitted structural design plans and calculations. All comments must be satisfactorily resolved and incorporated into the contract documents before the design can be approved.

Supplemental Specification
2005 Standard Specification Book

SECTION 02645

PRECAST CONCRETE BOX AND THREE-SIDED ~~STRUCTURES FOR~~ CULVERT STRUCTURES

Delete Section 02645 and replace with the following:

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Material and procedures for fabricating and installing single cell precast concrete box culverts and precast conventionally reinforced concrete three-sided culvert structures.

1.2 RELATED SECTIONS

A. Section 02056: Common Fill

B. Section 02317: Structural Excavation

C. Section 02324: Compaction

D. Section 03055: Portland Cement Concrete

E. Section 03211: Reinforcing Steel and Welded Wire

F. Section 03310: Structural Concrete

G~~F~~. Section 03390: Concrete Curing

1.3 REFERENCES

A. AASHTO M 198: Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets

~~B. AASHTO M 259: Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers~~

~~C. AASHTO M 273: Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers with Less Than 2 Feet Of Cover Subjected to Highway Loadings~~

B. AASHTO LRFD Bridge Design Specifications

C. ASTM C 877: Standard Specification for External Sealing Bands for Concrete Pipe, Manholes, and Precast Box Sections

D. ASTM C 1433: Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers

E. ASTM C 1504: Standard Specification for Manufacture of Precast Reinforced Concrete Three-Sided Structures for Culverts and Storm Drains

F. UDOT Quality Management Plan~~: Pre-cast / Prestressed Concrete Structures~~

1.4 SUBMITTALS

A. Shop Drawings: Furnish to the Engineer.
   1. Shop drawings: ~~1 full-size 24 inch by 36 inch, and 4~~Five half-size 11~~½~~ inch by 17 inch sheets with a 1½ inch blank margin on the left-hand edge.
   2. Design calculations ~~(signed and sealed by a Utah PE)~~ for Precast Concrete Three-Sided Structures~~.~~ signed and stamped by a Utah Professional Engineer (PE).
   ~~2~~3. Place the State project designation data in the lower right-hand corner of each sheet.
   ~~3~~4. Prepare shop drawings under ~~seal~~stamp of a Utah PE~~rofessional Engineer~~.

B. Department rejects units fabricated prior to written approval.

1.5 ACCEPTANCE

~~A.~~A. Precast concrete box culverts and three-sided structures may be accepted at a reduced price when the concrete strength is below that specified.
   1. Price adjustment pay factor following Section 03310.

PART 2 PRODUCTS

2.1 CONCRETE

A. Wet Cast Concrete: Class ~~4A(AE)~~3A(AE). Follow Section 03055.

B. Dry Cast Concrete:

1.	Minimum cement content:	~~564~~ 470 lb/yd^3 of concrete
2.	Maximum Water/cement Ratio:	~~0.15 gal/lb~~0.40
3.	Mix Design:	Submit for approval

2.2 REINFORCING STEEL AND WELDED WIRE

A. Coated. Refer to Section 03211.

~~B. Meet AASHTO M 259, and AASHTO M 273.~~

2.3 ~~FLEXIBLE GASKET~~JOINT SEALANT

A. ~~A.~~ Meet AASHTO M 198.

B. Use a flexible butyl-blend material with a minimum cross-section of 1 ½ ~~1/2~~ square inches as a joint sealant for box culverts.

C. Maintain the joint material at 70 degrees F or greater during placement.

~~B. 1 inch minimum initial thickness.~~

~~C. 2 square inches minimum in cross section.~~

2.4 JOINT WRAP

A. Refer to ASTM C 877.

~~2.4~~2.5 QUALITY ASSURANCE

A. Department pre-qualifies ~~manufacturers of~~ pre-cast concrete box and three-sided culvert section~~s~~ manufacturers ~~as a supplier of pre-cast concrete products~~ in accordance with ~~the Precast / Prestressed Concrete Structures section of~~ the

UDOT Quality Management Plan: Pre-cast/Prestressed Concrete Structures.~~: Pre-cast/Prestressed Concrete Structures~~.

B. Permanently mark each precast unit with date of casting and supplier identification ~~number supplied by the inspector~~. Stamp markings in fresh concrete.

C. Prevent cracking or damage during handling and storage of precast units.

D. Replace cracked or damaged precast units at no additional cost to the Department.

PART 3 EXECUTION

3.1 MANUFACTURE

A. ~~Meet AASHTO M 259, and AASHTO M 273~~Precast Concrete Box Culverts:
1. Meet ASTM C 1433.
~~1~~2. Multiply steel reinforcement requirements shown in table by 1.25, unless designed for HS-25 or greater loading.
~~2~~3. Provide ~~M~~minimum reinforcing steel spacing 4 inches around circumference and 8 inches longitudinal.
~~3~~4. Provide ~~1 inch~~1 inch minimum concrete cover to reinforcing steel for boxes covered with 2 feet of fill or greater. Provide 2 inch~~es~~ minimum concrete cover to all reinforcing steel for box sections covered with less than 2 feet of fill.

B. Precast Concrete Three-Sided Structures:
1. Meet requirements in ASTM C 1504 with the following exceptions:
   a. Design structure in compliance with AASHTO LRFD Bridge Design Specifications, Section 12.14.
   b. Design for HL-93 live loading.
2. Provide minimum reinforcing steel spacing of 4 inches around circumference and 8 inches longitudinal.
3. Provide 1 inch minimum concrete cover to reinforcing steel for three-sided sections covered with 2 feet of fill or greater.
4. Provide 2 inch~~es~~ minimum concrete cover to all reinforcing steel for three-sided sections covered with less than 2 feet of fill.

~~B~~C. Portland Cement Concrete: Follow Section 03055.

~~C~~D. Concrete Curing: Follow Section 03390.

3.2 PREPARATION

A. Excavating, Trenching, Bedding, and Backfill:
   1. Refer to Section 02317.

3.3 BEDDING AND BACKFILL

A. Over-excavate the material under the box location in compliance with Section 02317 to a minimum depth of 4 inches.
   1. Replace over-excavated material with granular backfill borrow as specified in Section 02056.
   2. Provide a minimum bedding of 4 inches of granular backfill borrow.

B. ~~Ensure a level and c~~Level and compact bedding material to provide uniform support of the structure along its entire supported width and length.

C. Use ~~A~~a loose sand leveling course no greater than 2~~"~~ inch in depth if needed~~may be added~~ in addition to the granular backfill borrow bedding.
   1. If loose sand is added, excavate the area to the appropriate depth to accommodate the backfill and leveling course.

D. Backfill structure with granular backfill borrow as specified in Section 02056.

E. Compact following Section 02324.

F. Refer to project plans for excavation, bedding, and backfill requirements where a three-sided culvert structure is placed on a footing.

~~3.2~~3.4 INSTALLATION

~~A. Installation with 2 ft or less cover, follow AASHTO M 273.~~

~~B. Installation with greater than 2 ft of cover, follow AASHTO M 259.~~

A. Inspect precast elements for defects before lowering into trench.

B. Repair or replace any defective, damaged or unsound precast elements.

~~Lay precast elements starting at the downstream end.~~

C. Use a trench width adequate to place and compact bedding material. Minimum outside width of trench is the outside width of structure plus 2 feet.

D. Lay precast elements starting at the downstream end.

E. Carefully lower precast elements into the trench with suitable equipment to prevent damage.

F. Remove all dirt and foreign material from joints. Prevent dirt and material from re-entering joints.

G. Apply joint sealant furnished by culvert manufacturer to box culvert.
   1. Place the joint material on the bottom half of the groove (bell) of the box last placed.
   2. Place the balance of the joint material on the top half of the tongue (spigot) of the box to be set.
   3. Place the material about 1-inch from the leading edge of the groove and tongue.

H. Disassemble joint, check position of joint sealant, repair alignment, and re-install when adjoining elements cannot be pulled together to meet minimum joint requirements.

I. Close the joints tightly.

J. Do not disturb previously completed joints during laying operation.

K. Do not lay precast elements when water is in the trench.

L. Clean top and sides of concrete surface ~~(~~at joints~~)~~ before placing joint wrap.

M. Use appropriate pulling devices to avoid misalignment and damage to box sections.

N. Place three-sided structure sections against previous sections as tightly as possible, while maintaining alignment.
   1. Do not exceed joint tolerances in the stamped drawings.

~~3.3~~3.5 STEEL REINFORCEMENT

A. Follow Section 03211.

~~3.4~~3.6 JOINTS

A. Make joint opening between box sections less than 1 inch measured face to face of ~~the~~ adjoining concrete surfaces.
   1. Reject box sections when the installation tolerance cannot be met due to casting variations.
   2. Prevent soil from being forced into the joint as the box sections are placed.

B ~~B.~~ Provide shear transfer devices for box culvert sections with less than 2 feet of cover.
   1. Device or method must be capable of transferring a minimum shear load of 3,000 lbs/ft of joint width through top slab of adjacent units.
   2. When using individual devices, space closer than 2.5 ft center to center with a minimum of two per joint.

C. Mechanically connect the exterior segments of three-sided precast concrete structures at all top joints within a minimum length of 12 feet from each end of the structure.
   1. Use a minimum of four mechanical connections per joint with a maximum spacing of 10 feet.
   2. Galvanize all plates, shapes and hardware.

D. Connect three-sided precast concrete structures to the footing~~-/-~~pedestal 2-feet from the outermost exterior edge of the structure at all four corners with a galvanized rigid mechanical connection.
   1. Locate the connection on the interior face of the segment to allow for future inspection.

~~3.5~~3.7 LIFTING HOLES

A. Provide a maximum of four lifting holes in the top slab, each having a maximum diameter of 3 inches.

B. Locate holes to avoid interference with the reinforcing steel.

C. Plug lift holes and lift insert recesses with a 1/1 sand to cement grout. Finish flush with all concrete surfaces.

~~3.6~~3.8 CONNECTION TO CAST-IN-PLACE CONCRETE

A. Where precast box sections join cast-in-place concrete, project the reinforcing steel a minimum of 12 inches out of the precast box section and square off the concrete face.

~~3.7~~3.9 REPAIRS

A. Box sections may be repaired as allowed in the referenced specification only when approved in advance by the Engineer.

B. Making repairs in advance of approval will be cause for rejection.

~~3.8~~3.10 MINIMUM LENGTH

A. Do not use pre-cast~~Individual standard box~~ segments~~: None~~ less than 5 foot in lay length.

~~3.9 BEDDING AND BACKFILL~~

~~A. Excavate the material under the box location in compliance with Section 02317 to a minimum depth of 4 inches.~~

~~B. Backfill with granular backfill borrow as specified in Section 02056.~~

~~C. Compact following Section 02324.~~

END OF SECTION

Standards Committee Submittal Sheet

Name of preparer: Barry Axelrod
Title/Position of preparer: Technical Writer
Specification/Drawing/Item Title: Projected Schedule for New Standards
Specification/Drawing Number:

Enter appropriate priority level:
(See last page for explanation) **N/A**

Sheet not required on editorial or minor changes to standards. Check with Standards Section.

NOTES:
1. All Submittal Sheets must be completed and sent to the Standards and Specifications Section by the Standards Committee suspense date as shown on their web page. (http://www.udot.utah.gov/index.php/m=c/tid=303)
2. The Preparer of the Submittal Sheet or the Standards Committee member (or authorized substitute) responsible for the submittal must be present at the Standards Committee meeting and capable of discussing and answering all questions related to the submittal. The item will be postponed to a later meeting if one of these people is not present.
3. Notify the Standards and Specifications Section immediately of any changes that impact the presentation to include absence of sponsor or delay in presentation.

Complete the following: (Use additional pages as needed.)

A. Why? Detail the reason for changing the Standard (Specification or Drawing), what has initiated a new Standard, or what has caused a new or changed item of interest.

At the April 2006 Standards Committee meeting the Committee gave the go ahead for the 2008 version and requested a more detailed schedule be put together. The following is the information presented for the April meeting.

The purpose is to discuss a schedule for a new set of Standard Specifications and Standard Drawings and the issue date. The 2005 version went into effect in January 2005, but planning and work began in the July 2004 time period.

Proposed events to consider.

1) Depth of the change. Do we just incorporate all changes to date or do a more detailed review? If a detailed review is done, review by all specification and drawing owner, AGC, and ACEC will be needed.
2) Coordination and approval schedule.
   a) Normal update, no major review. Advise all areas of upcoming revision and request inputs. April and June Standards Committee meetings. Proposed changes, either Supplemental Specifications or Standard Drawings to be presented for approval in the August and October meetings. Approved items would take effect when approved and

incorporated into the new set of Standards. October would be the last time items could be approved and make the new version.

b) Major review and update. Requires a total review by owers, AGC, and ACEC. Kickoff would have to be no later than the February Standards Committee meeting. Advise all areas at that time and set up meetings. (The following is the same proposed schedule as "a" above. This part of the process would not change.) Proposed changes, either Supplemental Specifications or Standard Drawings to be presented for approval in the August and October meetings. Approved items would take effect when approved and incorporated into the new set of Standards. October would be the last time items could be approved and make the new version.

c) Cancel the December Standards Committee meeting. This meeting has been cancelled the last few years. In 2004, it was cancelled because of 2005 version preparation as well as the holidays and Engineering Conference. In 2005, it was cancelled because of the holidays and Engineering Conference. Not having the December meeting has helped not only with the time needed to prepare a new version but to give everyone a break. Gathering and preparing inputs is difficult this time of year because everyone is busy with the Engineering Conference and then the short suspense date with the holidays creates problems.

3) Publishing and printing Spec Book.
   a) Kickoff and initial steps. Begin process to find a publisher for the specifications book hard copy in July. Use previous edition as a guide for bid submittal. Prepare as much of the specification book as possible by that date with updates posted as changes are approved.
   b) After the October Standards Committee meeting prepare the final specifications book and send to the printer by mid November. This gives a month and a half to print, bind, and ship the books.
4) Publishing and printing Drawing Book.
   a) Publishing is mostly electronic. Only a small number of hard copies are printed for the Committee and regions.
   b) Following the October meeting and approvals the electronic files would be prepared and digitally signed by Jim and Carlos. This process takes place while the specification book is at the printer.
5) Updating other files to include Advertising Checklists and Project Table of Contents files. This process takes place while the specification book is at the printer.
6) Web site update and rollout. This process can start prior to the October meeting to get the layout set. Files could not be added until completion of all above steps. Time period would be November and December for a January rollout.
7) Final steps. In 2005 the hard copy did not come in until approximately mid-January. During the first two weeks of January the web site would be finalized.

Recommendation: Publish a new set of Standards and all associated items for January 2008. Begin planning and kickoff in February 2007 in accordance with item A2b above for a major review and updated.

This recommendation was accepted with the modification in kickoff. The new schedule being presented at the June 29, 2006 meeting begins immediately upon approval.

B. How is Measurement and Payment handled? Existing (from the measurement and payment document), modified, or new measurement and payment to be included with all Standard Specifications or Supplemental Specifications.

Not applicable.

C. Stakeholder Notification for AGC and ACEC:

Not applicable as this time.

D. Stakeholders? From the list provided, document the stakeholders contacted, detailing: the company, name of contact, how contacted (by phone, email, hard copy, or in person), concerns, and comments of the change. Stakeholders:

Not applicable as this time.

E. Minimum Sampling and Testing Guide (MS&T Guide)? (Consider all impacts and possible changes to the MS&T Guide during the preparation process. Coordinate with the Department Materials Engineer as appropriate. List all impacts and action taken.)

Not applicable as this time.

F. Costs? (Estimates are acceptable.)

There is a cost of holding extra meeting and preparing a new version of the Standards, but this is not a determining factor in deciding when to print a new version.

G. Benefits? (Provide details that can be used to complete a Cost – Benefit Analysis.) (Estimates are acceptable.)

A new starting point for Standards used in projects. Multiple months of changes are incorporated in the new version so the starting point is no changes. The regions like changes kept to a minimum. Currently with five Standards Committee meetings a year we put out five supplemental specifications issues and five drawing changes a year. Occasionally there may not be any changes for a given meeting. April 2006 was the first in this cycle with no approved changes to the drawings.

H. Safety Impacts?

None anticipated unless addressed by a specific change to a Standard.

I. History? Address issues relating to the current usage of the item and past reviews, approvals, and/or disapprovals.

The following is a summary of the percent of change to date, including proposed changes in April 2006. (Not all April 2006 submittals were approved, but this does not have a significant impact on the decision to implement a new version in 2008.

1) Standard Specifications in the 2005 version - 135

a) Sections changed by supplemental specification - 31 (some changed more that once but that is not considered in the percent of change)

b) 23 percent of the sections have changed since January 2005.

c) Anticipated yearly changes - 25. Percent of change by 2008 version is 60 percent. For 2007 version, 41 percent.

2) Standard Drawings in the 2005 version - 220

a) Drawings changed - 61 updates and 20 new. 80 total. Seven deleted. 87 drawings impacted.

b) 40 percent change based on the 220 starting number and 87 changes of some sort.

c) Changes to the AT and SL drawings was significant. Not an expected future change.

d) Anticipated yearly changes not considering a change like those for the AT and SL drawings and other unique changes in 2005 is approximately 25. Percent of change by 2008 is 62 percent. For 2007 version, 50 percent.

Priority Explanation

Enter the appropriate priority in the box on the first page of the document.

Priority 1 Upon posting, this impacts all projects in construction and design with a Change Order, Addenda, and immediate change to projects being advertised.

Priority 2 Upon posting, this impacts projects being advertised.

Priority 3 Upon posting, the approved standard takes effect **four weeks** later for projects being advertised.

Schedule for 2008
Standard Specifications and Standard Drawings Issue

Note: Standards Committee meetings include reviewing and approving Department Special Provisions as Supplemental Specifications and other Supplemental Specifications and Standard Drawings.

Event	Date	Requirement	Progress
Standards Committee	June 29, 2006	Review and approve items as required.	On agenda
Standards Committee	June 29, 2006	Action Log item to present schedule for review and approval.	On agenda
Standards Committee Kick Off	June 29, 2006	Advise Standards Committee of the start of the process.	On agenda
Special Provisions review	July 5, 2006	Email to all holders of Department Special Provisions. Semi-Annual review - convert as many as possible to Supplementals.	Email sent on May 10, 2006. Waiting for updates. Started early based on region request.
UDOT/AGC/ACEC Notification	Within two weeks after June 29 Standards Committee meeting.	Notify of new Standards for 2008 and that teams will be formed for a comprehensive review of all Standard Specifications and Standard Drawings.	
Review and update of General Provisions	July 2006	Advise Construction Division to begin review of all General Provision Standard Specifications	
Standards Committee	August 31, 2006	Review and approve items as required.	
Standards Committee	October 26, 2006	Review and approve items as required.	
Standards Committee	December 14, 2006	Review and approve items as required.	Meeting could be canceled. Historically December meetings not held.
Special Provisions review	January 8, 2007	Email to all holders of Department Special Provisions. Semi-Annual review - convert as many as possible to Supplementals.	

Department Kick Off	January 8, 2007	Email to all Standards Committee Members and Regions (Director, Preconstruction, Operations, and Maintenance) 1. Advise of start of process. 2. Advise to select appropriate people to form the review team.	Need team member names by January 17.
Schedule Team Meeting	January 22, 2007	Set up first meeting	
Initial Team Meeting	February 2007	Date to be determined. Make assignments.	
Standards Committee Meeting	February 22, 2007	Update on book process and review and approve items as required.	
Follow up Team Meetings	February - May 2007	Meet as needed.	
Standards Committee Meeting	April 26, 2007	Update on book process and review and approve items as required. Present any specification and drawing changes that are complete.	
Final Team Meeting	June 2007	Prepare final recommendation.	
Standards Committee Meeting	June 28, 2007	Update on book process and review and approve items as required. Present any specification and drawing changes that are complete.	
File Preparation	July 2007	Begin putting new specification book together. 1. Update all supplemental specifications to appropriate standard. 2. Review all sections for format and standardization IAW Spec Writers' Guide.	
RFP	August 1, 2007	Begin process to obtain a publisher for the spec book.	
Standards Committee Meeting	August 30, 2007	Update on book process and review and approve items as required. Present any specification and drawing changes that are complete.	

Standards Committee Meeting	October 25, 2007	Update on book process and review and approve items as required. Present all remaining specification and drawing changes. Changes not approved at this meeting can not go into 2008 version.	
Hard Copy to Printer	November 14, 2007	Final electronic and hard copy complete and sent to publisher.	
Internet	December 2007	Build 2008 web site.	
Distribute Hard Copies	January 2008	Receive books from publisher and distribute accordingly.	
Internet	January 2008	Final web site update.	
Implementation	**January 2008**	**Complete the process.**	

Action Item Update for June 29, 2006 Standards Committee Meeting
(As of June 12, 2006)

Item 1, Rumble Strips: Item is past due. Policy already published. No coordination by the Standards Committee. No other information received in response to request.

Item 2, New Drawing of Three-legged and Four-Legged Intersection: Item not due until June 2006 meeting. No information received in response to request.

Item 3, Supplemental Specification 00555M, Prosecution and Progress, Limits of Operation: Due date changed at February 2006 meeting to open. No target date. No information received in response to request. Section number may change depending on upper management review.

Item 4, Supplemental Specification 02896M, Boundary Survey and Standard Drawing GW 6, Right of Way Marker. On current agenda for approval.

Item 5, Supplemental Specification 01452, Profilograph and Pavement Smoothness. On current agenda for approval.

Item 6, New Standard Specifications Schedule. On current agenda for approval.

Item 7, Review of Standard Sheets 1B and 1C, Index. Not due until August 2006 meeting.

End of Agenda Package